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STUDIES ON THE MATERIAL CULTURE OF THE ESKIMO IN WEST GREENLAND

ARBEJDER FRA
DEN DANSKE ARKTISKE STATION PAA DISKO. Nr. 7

SÆRTRYK AF MEDDELELSER OM GRØNLAND. LI

KØBENHAVN
BIANCO LUNOS BOGTRYKKERI
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Introduction.

During two hundred years Eskimo antiquities have been collected in Danish West Greenland, and yet, they are still to be found wherever the old site of a house exists, and in every grave not previously examined. The Greenlanders of our own time collect them when they come across them and bring them to the Europeans for sale. But only rarely do they search for them, and, to look for them, especially in old graves, is not considered to be an entirely respectable means of livelihood; hence the reason why graves are rarely stated to be the place of discovery. "I found them in the ground" is generally the first answer one receives.

Since I have settled down among the Greenlanders I have procured a small collection in this way. I myself have found only a very few of the objects; and, as my real field of work lies in another department, I have never had time to make excavations personally. For some of the objects I am indebted to the resident Danes, more especially to Mr. C. Fleischer, Qeqertaq; Mr. O. Mathiesen, Ritenbenk, the superintendent of the settlement; and to the Rev. H. Mortensen, Godhavn.

Usually, the finder had full knowledge of what he found; and in doubtful cases I have consulted others, for instance a great many Greenlanders, who have helped me with articles difficult to explain. In this respect I am more particularly indebted to the native head-catechist and hunter, Mr. G. Kleist of Godhavn, for the excellent help he has given me as regards the explanation of the objects and of their correct Greenland names; and also for some drawings illustrating old modes of hunting. All the implements, and even all the details of them have old, fixed and long established names, which are often interesting enough in themselves, but become even more so from the fact that they often recur in tribes which are now separated from each other by vast distances. Some of the most essential of these words are already found grouped in C. Ryberg's "Dansk-Grønlandsk Tolk," Kjøbenhavn, 1891; others I have found in S. Kleinschmidt's "Den Grønlandske Ordbog," Kjøbenhavn, 1871, or in its supplement (in Kjer & Rasmussen's "Dansk-grønlandsk Ordbog," Kjøbenhavn, 1893).

As KLEINSCHMIDT's dictionary is only partially arranged in alphabetical order, and as the derivatives must be sought for under the stems from which they are derived, I — following the example given by RYBERG in his above-mentioned book — have added, after those words which occur in the dictionary in question, the number of the page of the dictionary or of its supplement. There the readers who may seek such information will find the etymology and the real significance of the words. In cases where the words are not to be found in KLEINSCHMIDT, I have tried, as far as possible, to discover their etymology, or their stem; and have then referred to this. Herein I have had an indefatigable co-worker in the Rev. H. MORTENSEN of Godhavn, and I wish to express my best thanks to him for his kind assistance.

The reason why I have not referred to the numerous dictionaries of the other Eskimo dialects already existing is simply that they have not been accessible to me here.

In case the Greenland terms here mentioned should be used by the reader for comparison with terms from other Eskimo tribes, I want to emphasize the fact that, as a rule, I only give the names of independent articles in the objective form, under which form the word should be looked for in the dictionaries. The parts and accessories which pertain to the articles and do not occur— or are not used — independently I give with the possessive-suffix; in which case the name of the principal object, in the genetive case, must, consequently, always be understood to stand in front. This is in accordance with Eskimo usage of language and train of thought, and thus the Eskimo will name the article on inquiry, — with many words only the form with the suffix exists. But the consequence, namely that to those who are not familiar with the structure of the language some of these words will appear to differ from those in the dictionary, cannot be avoided.

The following example will best serve to illustrate my method: —

Under harpoon, *tūkaq*, will be found: —
the blade, *ulua*, 392.
the barb, *akinga*, 18.
the line-holes, *qingai*, 146.
the shaft-socket, *itsiornera*, 115.
the toggling butt, *pamiâ*. 271.

On the pages referred to will then be found the objective-forms: — *ulo*, a knife; *iteq*, a rumphole; *akik*, a barb of a hook; *qingaq*, a nostril; *pamiaq*, a tail-likeness, etc. The possessive-forms given should consequently be translated: its knife, its barb, its nostrils, its worked rumphole, its tail-likeness, and everywhere *tūkap*, the harpoon's, must be understood before the words.

As I am not familiar with the methods used by linguists for the transcription of the Greenland words into phonetic characters (for in-

stance, W. THALBITZER's method) I have followed the KLEINSCHMIDT orthography with the exception that, following RINK, BOAS and others, I have altered the uvular *k* to *q*.

While writing the following notes I have often felt the lack of several standard works upon the present question, which ought to have been consulted. I have particularly missed a number of papers by BOAS, EGEDE, FABRICIUS, MASON, MURDOCH, SOLBERG and others. Such works of the above authors, and of others, as have been accessible to me I have given in the bibliography. When, instead of simply delivering these objects to a museum as others have done with those they have collected, I have preferred to forward them accompanied by an explanation, the chief reason is that I am fortunate enough to live in the midst of the people who have produced and used these articles, and can, therefore, easily ascertain their opinion regarding them. It appears to me that authors have sometimes neglected to hear the Eskimo's own explanation, and have, thereby, been led to perpetrate errors, and to advance opinions and theories which are based upon wrong suppositions, and are, therefore, misleading. In order to have an opportunity of correcting such mistakes before they circulate further, and also because the study of the implements of the West Greenlanders has been greatly neglected during the latter decades, I feel justified in publishing these notes in spite of their casual and fragmentary character.

Unless otherwise stated the figures are from the author's own drawings and photographs.

Disco, Greenland, November 1911.

I. Historical Notes. Method of investigation. The Eskimo Missile Weapons: Definitions and Classification.

Historical Notes.

Nowhere is the ability of the Eskimo to construct ingeniously complicated implements from deficient materials and with primitive tools more developed than in the construction of their hunting-weapons. It is therefore very natural that these ingenious implements greatly attracted the attention of the travellers, investigators and missionaries who first came across them. Ever since the earliest accounts of Eskimo culture we find hunting weapons most exhaustively described, and it is these which are usually illustrated and most commonly collected for the museums.

Owing to the fact that the Eskimo culture which has developed in West Greenland was the earliest and most easy of access, that form of it has been the first to come under investigation. Through the descriptions we have from the first missionaries, and especially through HANS EGEDE'S famous "Perlustration" with its numerous translations and DAVID CRANZ'S "Historie von Groenland" — written in a universally current language — the leading features of this form of culture were established and an interest in it created; and, thus, the culture of the Eskimo of West Greenland has to a certain degree been the standard and the basis for all subsequent studies in Eskimo culture.

But these two authors gave only the leading features of the subject in question, and in CRANZ'S work there are many errors and mistakes. Later, the clergyman, naturalist and philologist, OTTO FABRICIUS contributed a series of notes on the material culture of the West Greenlanders, which, as regards accuracy and profound understanding, far surpasses the works of his predecessors and of many later authors. FABRICIUS'S abilities were especially suited for this work; because, besides his knowledge of natural science and of languages, he had, for the accomplishment of this work, the invaluable advantage of being himself able to hunt in the Eskimo manner: to manage his kayak, and to use the special Eskimo hunting weapons. Therefore, as regards this point, no one has been able to distinguish, as he could, between what was essential and what was incidental.

FABRICIUS'S works should therefore be the classic for every one who studies this subject. That they have, unfortunately, not become so is due to several circumstances, and, in particular, to the fact that they are written in Danish and that they occur scattered, in the form of numerous small treatises, and often even as unimportant supplements to, or parts of, purely zoological works. They are, moreover, very sparingly illustrated, and the drawings are not happy, being faulty as regards measurements, etc.[1] It is much to be wished that a complete edition of all FABRICIUS'S ethnological papers could be published in a universally current language and illustrated with modern drawings of the objects which he describes, large collections of which are contained in the National Museum in Copenhagen.

Since the days of FABRICIUS no thorough and original studies of West Greenland implements are to hand. A good, popular description of their main features is to be found in RINK'S well-known book "De

[1] That FABRICIUS'S works were also forgotten in Denmark at an early period may be seen from the fact that C. C. RAFN, when writing a report of antiquities given to what was afterwards the National Museum, based that report on the works of CRANZ, PARRY, and several others without mentioning those of FABRICIUS, and explains the implements illustrated by him quite incorrectly (Antiquarisk Tidsskrift, 1854).

danske Handelsdistrikter i Grønland."[1] Kayak-hunting and its implements are described by F. NANSEN in his book "Eskimoliv", which contains excellent illustrations. Lastly, G. SWENANDER has recently published an exhaustive description of the harpoons, and lance and dart points, which are to be found in the rich collections contained in the Stockholm Museum. The work is especially valuable because its numerous illustrations are perfect representations of these objects. W. THALBITZER has lately directed attention to, and illustrated, some individual West Greenland implements for comparison with those of East Greenland.

As regards the East Greenland implements the conditions are far more favourable. Since the publication of G. HOLM's classical, exhaustive, richly and well illustrated description of the material culture of the Angmagsalingmiut, almost every fragment and article from East-Greenland, which has subsequently been found, has been described and illustrated (by RYDER and THALBITZER).

On the other hand we still lack a thorough description of the kayak with all its hundred and one individual parts, and its peculiarities of construction. The alterations and new adaptations consequent on the introduction of fire-arms have been loosely mentioned, but are described for the first time in the following pages; and, what is very astonishing, a kayak weapon commonly used in West Greenland is here mentioned for the first time! And, strangely enough, another culminating point of the creative ingenuity of Eskimo culture, the dog-sledge with its appurtenances, harness, etc., has never been described from Greenland; simply because the first missionaries wrote their books in South Greenland where sledge culture does not occur. If we would seek information in literature as regards the Eskimo dog-sledge, we must resort to English and American authors' descriptions of conditions in other tribes, and that in spite of Danish officials in Greenland having themselves used the dog-sledge for 200 years, and of their being fully able to compete with the Eskimo in the use of it.

Method of Investigation.

Of late years no question has occupied the Eskimo-investigators so much as the question regarding the origin of the Eskimo and the routes along which they may have migrated. Anthropologists, linguists and ethnologists have all been equally interested in its solution. During latter years, authors, especially American authors, have brought together large collections of a single kind of implement for monographic treatment,

[1] English edition: H. RINK: Danish Greenland, its People and its Products. London, 1877.

they have tried to classify them into types, and from the presumed relationship of the types have tried to draw conclusions as to the presumed routes, and their directions, along which the tribes may have migrated. SWENANDER'S work may be characterized as an attempt in the same direction. We must admit the merit of the intention which underlies these monographs; but, at the same time, it is to be regretted that the authors have often had no clear idea of what was essential in the implement in question, and what non-essential and therefore subject to the capricious alterations of the maker. It often strikes one that the authors have not sufficiently understood the purpose and the use of the implements, especially those authors who, as Museum officials, have no doubt had a large material at their disposal, but have never had an opportunity of seeing the individual parts of this material in use. Proper attention has not always been paid to the information given by the collectors, but the material has been treated as if it originated from a form of culture so entirely extinct that any guess-work was permissible. The result is that confusion has arisen between entirely different implements: very ancient ones being regarded as modern, and vice-versa. The conclusions and deductions which are thus derived are of no more value than if we, for instance, took a modern axe and hammer, called them types of the same implement, and arrived at the conclusion that he who uses an axe stands on a higher, more developed stage of culture than he who uses a hammer. By way of example I may mention that in MASON'S monograph "Aboriginal American Harpoons" the most heterogeneous articles have been confused under "harpoons," and the author is quite at fault as regards the age and purpose of the Greenland forms. SWENANDER also, influenced by MASON, regards all his harpoons from the same point of view; considers them as one and the same implement; does not conceive that they may possibly differ as regards their purpose and use; but, deriving and developing the one "type" from the other, thus draws conclusions as to the age of the Eskimo culture in Greenland!

Accordingly it will be necessary to begin by giving a clear definition of what is, and what is not a harpoon. I am not blind to the difficulties and dangers of trying to give such definitions in a language which is not my own. That my classification and division are right in the main I conclude from the fact that they agree with the Eskimo, that is to say the West Greenland, terminology. I also hope that the English terms chosen express in some measure the corresponding Eskimo conceptions, since they are in accordance with the expressions used by the majority of the English-speaking authors who have studied the conditions at first hand; though, on the other hand, they do not agree with — for example — MASON'S terminology and definitions.

But first I think it right shortly to mention the principles on which I have based the classification, or what comes to the same thing the method,[1] which I have followed in the investigation not only of the weapons but also of the other implements. In the investigation of any implement, be it a weapon, a tool or a toy, and regardless of the culture from which it originates, an endeavour should be made to solve the following questions: —

1) What is the object aimed at with the implement?
2) How is it used in order to gain this object?
3) How is the form of the implement adapted to this use?
4) How far has the quality of the material and tools influenced the form, so that it is not, perhaps, the ideal one?

Not until these questions have been answered as minutely as possible can we proceed to an investigation as to whether some individual parts remain which are of no real "use," but are due to style, to the use and wont of the district, or to a sudden and casual caprice of the maker. Hereby is understood all ornamentation.

So long as we have no sure knowledge of the age of the individual tribe in the region where we now meet it, all the points which are cleared up by the solution of the above four questions are, evidently, of little or no value as starting points for conclusions regarding the origin and the migrations of the particular type of culture in question, or for tracing influences from elsewhere. When the matter in question concerns Eskimo tribes from West Greenland, regarding whom we know with fair certainty that they have at different times wandered into the country over Ellesmereland and Smith Sound, then we may take it for granted that numerous implements which could not be used so far northwards must, so to say, have been invented and perfected several times, namely, every time the tribe came to a region where the implement was needed. Of special interest in this connection is the kayak with all its accessories which, as will subsequently be shown, in certain peculiarities of form still bears testimony to what has just been said.

In order to carry out an investigation according to the principles on which the above-mentioned questions have been based — to put it shortly I will call them technological principles — one should preferably be able to use the implement which is to be investigated, and preferably, also, be able to make it oneself from the materials, and with the tools used by the aborigines. Because, not until we ourselves have made use of a complicated implement do we

[1] A more exhaustive description of the method will be given in the Zeitschrift für Ethnologie, Berlin, 1912.

fully understand all its small details, which, at first sight, we either do not notice at all, or regard as unimportant for the purpose of the implement, and therefore readily consider them to be peculiarities of style belonging to a certain district or tribe. This I have specially experienced when studying the Greenland dog-sledge with its appurtenances. My first sledge I bought ready-made; the sledges I afterwards wanted I built myself, and both my successful and unsuccessful attempts towards emancipating myself from the forms which are in vogue in the neighbourhood of my home have taught me the intention of many small details which, at first, I did not even notice; and also, that individual parts occurred which were solely due to old-established use of material of inferior quality and could, therefore, be very well replaced by something better. By simultaneously studying sledge-types owned by clever sledge-drivers, Greenlanders and Danes, I got an eye for differences which were adaptations to local conditions, for example, the occurrence of much or little hummocky ice; much or little overland driving; etc. Thus, I can fairly well distinguish sledges from the different settlements near Disco Bay. Whereby I think I have gained knowledge which enables me better to estimate the type of sledges, intended to be drawn by dogs, from entirely different regions; for instance, those of the Samoieds and the Indians. At first these appeared to differ so greatly from those of the Eskimo, that they could not at all be compared with the latter, but now their form mainly serves to inform me of the conditions of climate and of the supply of material in the region in question.

The above-mentioned ideal end, viz., personally to be able to form an opinion of the implement as a user, we can, however, only rarely attain. In the majority of cases it must suffice us to observe the use of the implement and to try to supplement our observations by questioning the user himself. But here it should be remembered that we cannot put any question we please. If an Eskimo hunter is asked why his harpoon is as it is, he no more has an answer ready at hand than a cultivated person would have if, for instance, he were asked why a pair of scissors has the form it has. If, on the other hand, the hunter is asked why his harpoon has this or that detail, wherein it differs from all others, then information as good and well-founded may be expected as would be had on asking a tailor why a particular pair of scissors has just a special peculiarity.

It may now be asked: will nothing be left which cannot be solved by technological investigations? In the majority of cases the answer will be in the negative, unless there are ornamentations. But sometimes there will be differences of construction also, which the technological investigation cannot explain, and which then, in return, often have considerable interest of another kind. Firstly, we must here remember that the same end may be reached in several ways, and this may result in an implement having several ideal forms which

individually are equally good. By way of example, I choose the two forms which the shaft of the kayak harpoon has all over Greenland: —

ernangnaq (71), short and light, with "feathers" of bone plates, the throwing stick acts on the rear end.

unâq (395), longer and heavier, without "feathers," but often with a bone knob, the throwing stick is applied somewhat behind the centre.

In some settlements the *unâq*'s are in the majority, in others the *ernangnaq*'s, but nobody uses more than the one kind. It is easy enough to get the significance of the details of the individual harpoons explained; and rational, well-founded opinions as to the superiority of the one over the other may also be had; but nobody can give any rational reason for the fact that both forms are to be found, reasons which might signify local adaptations to the custom of the district or the supply of material. If the one were in several respects better than the other, then the less perfect one would naturally be abandoned. As there is a rather essential shade of difference in the throw, it can be understood that the hunter who, from his childhood, has been accustomed to practise the one kind (namely his father's) continues to do so; his living being dependent on the result of his throw. For instance, if we have accustomed ourselves to write with a broad-pointed pen we should find it awkward suddenly to have to write with a fine-pointed one. Consequently, we here appear to have two ideal forms before us, which have perhaps come into existence and been developed at different times, and afterwards, by intercourse, have been scattered all over the country.

Another example is the form of the kayak, which has been lightly touched upon above. It has often been mentioned that there is a characteristic difference in the West Greenlander's kayaks in the southern and northern districts; for example, in the northern kayaks the stern is bent upwards, so here the deck forms an angle. Now Schultz-Lorentzen (p. 311) has recently demonstrated that, in the southern type, two subtypes may be distinguished, one of which from southernmost Greenland differs from the type which is found near Godthaab and approaches the East Greenland type. To this I can add that, in the northern form also, at least two subtypes occur, viz., one around Disco Bay (and at Ūmánaq?) and another at the two northernmost settlements, Pröven and Upernavik. On a trip last year the latter type struck me as extraordinary from the fact that the stern almost formed a right angle with the deck, but my companion, a hunter and kayak builder from Disco, told me that there were many other and far more decisive differences in the construction of the frame-work than the one mentioned above.

To these four West Greenland kayak-forms the East Greenland one comes fairly near, while the Smith-Sound Eskimo's lately invented, clumsy form, which is so primitive that no West Greenland hunter would be able to use it, differs widely from them. A skilful investigation of these six types will undoubtedly prove that many of the details are only adaptations to the various external conditions in the different localities. But there will unquestionably be things left which cannot be explained in this manner and, more particularly, details regarding the construction of the frame-work, the outer style, etc., which bear witness to the different periods and tribes which have produced them, and that this is more than probable is proved by the fact that their distribution coincides with the distribution of the six main dialects of Greenland.

It is not always that one can carry out a technological investigation of an Eskimo implement in the same way. The arrangement of the succession of the questions set forth above for solution is the one most suitable for the treatment of a highly specialized implement for a very special purpose. If the implement in question is more of a universal implement, then more satisfactory results will be arrived at by first trying to understand its form, and especially by trying to find out whether, in a large collection of forms, there might be expressed an attempt at a certain ideal form. With other implements it is not the form which is of interest, but only the material; or, of interest is the difficulty which the Eskimo has had to overcome. Here I must leave it to the reader to decide whether the method in question is not, after all, useful; and to exemplify the two above-mentioned cases, I shall be content to refer to my treatment of the bow (see pp. 158 sqq.) and of the woman's knife (see pp. 203 sqq.) in the present paper.

Where an implement has been set aside because a new culture has produced another and better implement, it will naturally be more difficult to form an opinion of it technologically. In this respect I am thinking of weapons such as bows and arrows which of course are immediately abandoned when guns can be obtained. The earliest travellers who came across such implements while they were still in use have generally given us too scanty information as regards their use; usually, we are not even told for which sort of game this or that particular arrow is intended. Here we must try to gain what information we can through the traditions existing amongst the descendants of the people who made and used the implement. That, in this way, valuable information may still be obtained I have shown in my previously published description of the curious, highly specialized arrow point for Caribou hunting (see bibliography). The introduction of iron also influences the form of the implements; at first only slightly, because iron is no more than a better stone, but afterwards the technological differences of the two substances became more clear to primitive man, and what had

previously been the ideal form in an implement need not be so any longer. Here I refer the reader to my description of harpoons with stone and iron blades (pp. 128 sqq.).

Now we pass on to the numerous implements or, strictly speaking, the parts of implements composed of stone. As is well-known, archæologists have long ago created a system of names such as "arrow-points," "scrapers," "tranchants," "perforateurs," etc. for the thousands of stone implements which have been brought to light from remains of extinct forms of culture in Europe and elsewhere. It would be easy to fit the stone implements of the Eskimo and other uncivilized people into this system, as the forms are often identical. But it is doubtful whether anything will be gained by doing so. All these names imply a use which is perhaps right in some cases, but regarding which we know absolutely nothing. And archæologists have even had courage enough to call certain bone implements from the Madéleine culture "bâtons de commandement," a name which implies a use to which no investigation, but only our imagination, can lead us.

Here it would certainly be better to take the converse course and try to rescue from the aborigines, through their traditions, what is still left to be rescued. Certainly they must have a better understanding of their own stone implements than we can have! At any rate it has impressed me strongly, when laying before a Greenlander a collection of Eskimo "arrow-points" of stone, to see how, without hesitation, he sorted them out in different knife and lance-forms; and how, afterwards, another Greenlander, independently of the former, identified them in almost the same manner.

It cannot be emphasized too strongly that the majority of the stone implements are not complete, but only component parts. When the primitive man is so far developed that he can cleave the flint into the form aimed at, he can also master the far easier task of providing the piece chipped off with a suitable and convenient handle. Therefore it appears to me to be a waste of acumen to try to show from the form of the so-called "humpbacked-knives" that primitive man, also, was right or left-handed (see WILSON, Arrowpoints, p. 952). How complicated the implement of which a small piece of flint forms a part may be will be shown subsequently under the description of the Eskimo "Man's Tools" (pp. 191 sqq.). This example shows not only that tradition can throw light upon the use of a stone-age implement, but also that the method of work itself, adapted to the stone age implement, may be preserved after the stone implement has been replaced with iron.

It appears to me that these examples suffice to show that among savages and their descendants now alive information is to be had which may at some time help us to a better technological understanding of the remains of implements belonging to our own ancient culture.

Classification of the Eskimo Missile Weapons.

We shall now try on purely technological principles to classify the different forms of Eskimo missiles. I give the following generic definitions: —

A **Harpoon** *is a pointed and barbed weapon for hunting aquatic game; attached to a line; and thrown by the hand (in modern times shot from a gun) or thrust by means of a shaft; intended to fix the game to a float, a buoy, a boat or to the ice or the hunter himself.*

A **Dart** *is a pointed and barbed weapon thrown by the hand; intended to pierce the game and to fix it to the weapon itself.*

A **Spear** *is a pointed and barbed weapon thrust by the hand; intended to pierce the game and to fix it to the weapon itself.*

An **Arrow** *is a blunt or pointed and sometimes also barbed weapon; shot from a bow; intended to kill the game by the blow, or to pierce it or fix it to the weapon itself.*

A **Lance** *is a pointed, but not barbed weapon, thrown or thrust by the hand; intended to pierce and kill the game.*

It is at once seen from the above definition and from the Synoptic Table on p. 125 that in contradistinction to the majority of authors I use the word harpoon to indicate only that part which the others call "the detachable point of the harpoon." Here I am in agreement with the Eskimo train of thought and language, which has for the part in question a generic designation: *tūkaq*, while the shaft, according to its intended use, occurs in many various specific modifications, each under its own name. Therefore, I am naturally also in agreement with those authors (FABRICIUS, KLEINSCHMIDT, RYBERG) who base their classification, as I do, on that of the Eskimo.

Under these generic terminologies I therefore comprise the various specific ones; so far, that is to say, as they concern our subject — the culture of the Eskimo.

1. Harpoons.
   a) Throwing harpoons for hunting seals, walruses and small whales from kayak.
   b) Thrusting harpoons for the various forms of ice-hunting.
   c) The little-known harpoons for fishing.
   d) Other little-known harpoons for Right Whale hunting.

Synoptic Table to facilitate the definition of Eskimo Missile Weapons.

- **Barbed: with the intention of preventing the game from escaping, especially by diving**
  - the toggling device by means of a line attached to the hunter or to a float or a vessel, the shaft, when present, being totally detached: harpoons: .....
    - for thrusting: ice-harpoons.
    - for throwing: kayak-harpoons.
    - for shooting: modern whaling harpoons.
  - the toggling device in various ways attached to a shaft to which the game is to be fixed: .....
    - for thrusting: spears.
    - for throwing: darts.
    - for shooting: barbed arrows.
- **Not barbed: with the intention of killing the game** .....
  - for thrusting: the small kayak-lances, daggers, knives for despatching.
  - for throwing: the large kayak-lances.
  - for shooting: blunt arrows, or arrows with cutting, but not barbed points.

2. Darts.
   a) The Eskimo bird-darts for killing sea-fowl.
   b) The various forms of bladder-darts for hunting seals, sea-otters and other aquatic game.

3. Spears.
   Fish-spears for catching various kinds of fish.

4. Arrows.
   a) The various forms of blunt, pointed or barbed arrows for various kinds of hunting on land.
   b) The peculiar sea-otter arrows, which were used by the Western Eskimo. They form a transition to darts.

5. Lances.
   a) The large kayak lances with movable, but not detachable foreshafts.
   b) Lances with detachable points used for hunting deer in ponds, or as reserve weapons, on harpoon shafts.
   c) The large, but little-known whale lances.
   d) The small kayak lances without movable or detachable points or foreshafts. They form an easy transition to daggers or knives.

II. Harpoons (*tũkaq*, 375, plur. *tũkait*).

Morphology and Terminology. Different authors have applied various principles in the orientation of the harpoon. I use here the following nomenclature, which appears to me to be the clearest and most comprehensible, and is also in all essentials in accordance with that of MASON and SWENANDER. I call the end where the blade is inserted the fore end and the other the hinder end. I call the plane which passes between the line holes the vertical plane. As the majority of harpoons are symmetrical this plane may in addition be referred to as a symmetrical or median plane (for an exception, see Fig. 1, *D*). The plane at right angles to the vertical plane I call the horizontal plane; it divides the harpoon into a dorsal and a ventral part, hence I can speak of a dorsal, ventral and lateral face. Fig. 1 shows four typical forms of harpoons, of which *A*—*C* are symmetrical. The corresponding diagrammatic orientation of the planes is shown in Fig. 2.

The main object of the harpoon is to fix the game struck to a line, and thereby to a float, a boat, the ice or the hunter. In the case of small game the intention is that the harpoon should simultaneously

wound the animal severely; but the latter is a secondary object. From a boat the harpoon is thrown. For this it is necessary that it should be furnished with a shaft, but as soon as it has struck the game the shaft has done its part, and must be got out of the way, so that it does not become entangled in the line or broken by the movements of the animal. From firm ground the harpoon is thrust into the game. The

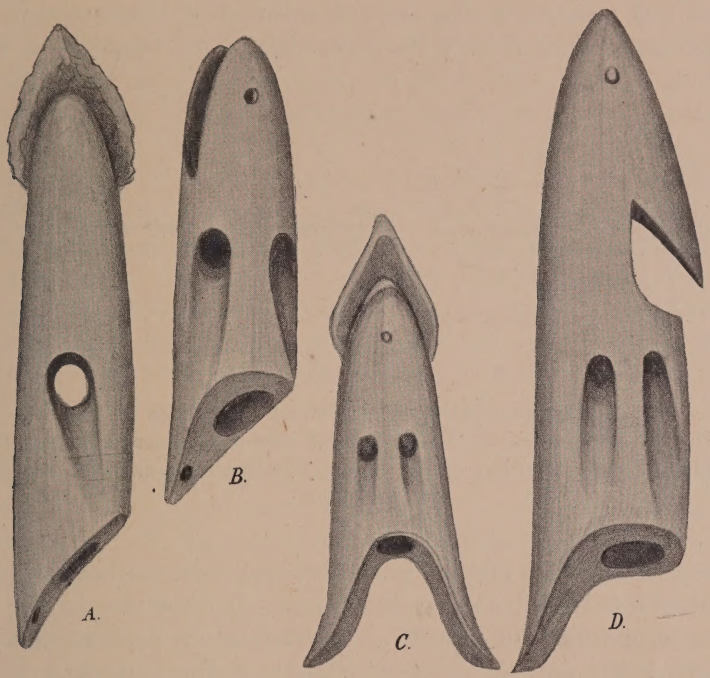

Fig. 1. Typical West Greenland forms of harpoon and their orientation. A, Symmetrical; blade-slit vertical; blade of stone; line hole situated about the middle of the bone piece minus the blade; toggling butt undivided, dorsal. B, Symmetrical; blade-slit horizontal; blade of metal; line hole ventral; toggling butt undivided, dorsal. C, An almost bisymmetrical little form; toggling butt divided laterally; in other respects resembling B. D, Large unsymmetrical form; the blade was of metal, but rather small, but the wound was enlarged by a lateral barb with a cutting fore-edge. This barb is sufficient to hold the harpoon fast in a seal, while with Narwhal and White Whale the harpoon should be driven so far in that the undivided toggling butt can perform its function.

length and arrangement of the shaft is regulated according to the various conditions under which the harpoons are used.

In order that the harpoon (Figs. 1 and 2) may perform its main function its hinder end is cut aslant; it may, moreover, be undivided, situated on the dorsal side, or be unilateral or divided laterally. The way in which the strap of the line is placed may also contribute to an easier and more effective toggling. The line hole may run directly through the harpoon, or lie in the horizontal plane preferably somewhat down the ventral side reverse to the toggling butt, but this may easily inter-

fere with the strength of the harpoon. In order, here, to preserve the greatest strength possible the hole is led in a highly complicated roundabout way (see Figs. 1 and 2). But, here, it must again be taken into consideration that it does not prevent the shaft being detached in due time in the case of a throwing harpoon, wherefore we here find the symmetrical, well-balanced harpoons with complicated line holes, while this danger is not present in the case of a thrusting harpoon, which may have any appearance if only its main object, the toggling, is secured.

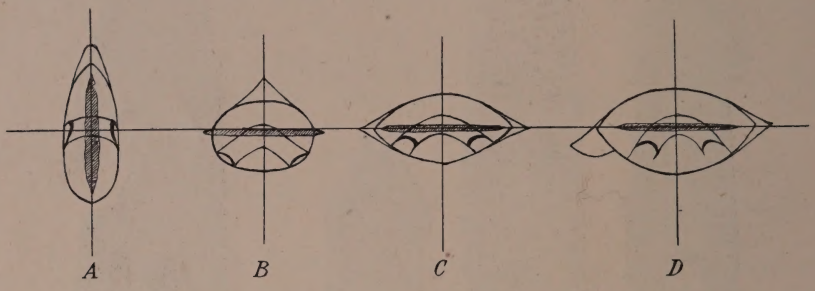

Fig. 2. Diagrammatic orientation of the planes in Fig. 1.
The horizontal line indicates the horizontal plane; the perpendicular lines the vertical planes. The position of the blade, the line hole and the toggling butt is indicated.

The inserted blade may lie in the vertical or in the horizontal plane. The former (cf. Fig. 1, *A*) SWENANDER (p. 5) considers to be an old, primitive form which he regards as unpractical on account of the position of the blade and the limited strength of the harpoon. It is true that the harpoon is old, but it is too widely distributed and occurs in too great numbers to permit of its being called, as a matter of course, unpractical; nor do the reasons given by SWENANDER for this conclusion hold good. The harpoon is a thrusting harpoon; the fact of its being compressed in the vertical plane is just what gives it strength, and being a thrusting harpoon the line hole may be placed almost as high up towards the dorsal side as wished, without risking failure with the toggling. The position of the blade is far from unpractical. If the blade had been a riveted, cutting, metal blade, it might have been feared that, while revolving in the animal, it would cut itself loose. But SWENANDER (and as it appears all other authors before him) seems to have overlooked the fact that the blade in this type was a loosely inserted stone blade. And, if so, it is the most practical way of placing it; because, during the process of toggling, the delicate blade runs no risk of being broken, which it undoubtedly would if it were placed in the horizontal plane. Perhaps it will be forced out of its slit, but then the misfortune is not great; it may afterwards be taken out of the wound and be re-inserted.

In all harpoons of this type the line hole is situated rather far back. The length of the blade is not reckoned with in the toggling part, therefore the bone part in front of the hole is comparatively long.

I am aware that harpoons of this type occur in which the blade is of iron. SWENANDER figures one from Port Clarence, on p. 39, which he thinks is made merely for sale, and states as his ground of argument that the iron blade is not riveted. This is, however, no reason to prevent its being used. I dare not deny that harpoons might be found occasionally with fixed metal blades in the vertical plane, but they are transitional forms of rare occurrence and such harpoons, I admit, are unpractical.

The material for the bone part of the harpoons is taken by preference from walrus-tusk or from antlers. The latter material is very proof against breakage and is easier to work; it is not cold-short nor is it apt to split, but it has the drawback that only the peripheral part possesses the good properties of the material. The core is spongy, and as the shaft socket must be placed there, it may easily happen that the foreshaft can bore itself fast and make its withdrawal difficult. In the case of a thrusting harpoon this is of no consequence, nor is the thrust so violent here; but it is very important in the case of a throwing harpoon. But walrus-tusk is not available everywhere, and it is not the whole of the tusk that can be used. Certain parts of it are apt to split, nor is it very proof against breakage; on the other hand it is imperishable as regards thrusting. Here the user must adapt his form to the material at his disposal and to the use he especially expects to make of his harpoon.

The parts of the harpoon. The bone-piece has no special name; it is the harpoon itself according to Eskimo train of thought. The fore end was often sharpened and pointed; there was, consequently, no special blade. This feature is still to be met with in thrusting harpoons. The blade (*ulua*, 392) formerly consisted of a chipped and often polished stone — here, at Disco Bay, of chalcedony or jasper (*angmâq*, 35) — which was set tightly into the slit, without lashing, as this would impede the entrance of the harpoon into the game. In the latter case the blade is inserted in the vertical plane, in order that it shall not break during the rotation of the harpoon in the animal. Tellurian iron has also been used, and, in the absence of anything better, a blade of a harder piece of bone than the rest of the harpoon. Afterwards the blade was of metal, iron or steel, and then it was placed in the horizontal plane. At first the material was expensive and difficult to obtain. They economized in the use of it, the blade was small, but as a compensation the harpoon was provided with one or two lateral barbs (*akinga*, 18). The fore-edges of the latter were sharp and served to widen the wound inflicted by the blade; on the other hand they were of less importance as a toggling apparatus, as the effective toggling was accomplished by the terminal barb only. Sometimes, but rarely, a

ventral barb occurred. The line hole is simplest in those harpoons which have their greatest width in the vertical plane, where it simply cuts straight through the harpoon (see Fig. 1, *A*). Then there are only slight indications of grooves running obliquely backwards. In the harpoons which have their greatest width in the horizontal plane the line holes (*qingai*, 146, its nostrils or *issai*, Supplement, p. 17, its goggles) are on the ventral side, and distinct grooves extend from them backwards. The line hole runs obliquely inward and upward. Thereby a more effective toggling is attained without loss of strength (see diagrams, Fig. 2). The shaft-socket (*itsiornera* from *iteq*, 115; *-iorpoq*, 421) is well-rounded at the edges so that the shaft does not fit tightly into it. The toggling butt is often just cut aslant in such a manner that the terminal barb is situated in the middle on the dorsal side. It may also be unsymmetrical, being prolonged obliquely behind. In such a case there is nearly always a lateral barb on the opposite side (see Fig. 1, *D*). In a throwing harpoon the toggling butt is usually divided symmetrically, formed like a fish-tail, and placed on the dorsal side so as to allow ample space for the movable foreshaft. It is called *pamiâ*, 271. Sometimes the bipartite symmetrical terminal barb may have its two points placed almost in the vertical plane (see Fig. 1, *C*). It is used especially with small harpoons. In thrusting harpoons, but rarely in throwing harpoons, there is a small hole in the terminal barb in which a small piece of line may be attached that may help in hauling the harpoon out of the wound.[1]

The size of the harpoon. At Disco Bay the rule is that a harpoon for universal use must be capable of being hidden in the hand, so that only the blade protrudes. But if a hunter expects to catch White Whale or Narwhal frequently, this size is too small; the strength of these animals and the loose consistency of their skin require a large harpoon, otherwise it will be torn out.[2] On the other hand, it is often difficult to throw a common harpoon so that it pierces through the thick and strong skin of the walrus. Here a small harpoon is more suitable; as, if only it is capable of resisting breakage it will not be torn out, but will hold as well as the line and the float, nothwithstanding the enormous strength of the walrus. The thrusting harpoons, also (*kapissiniutit* or *kapissiutit*, plural of *kapissiniut; kapissiut*, derived from *kapivâ*, he stabs it, 169),

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[1] The reason why this practical little contrivance is not found in every thrusting harpoon is a psychological one. Only if the hunter by his skilfulness has proved that he needs it, i. e. that he frequently catches several seals in succession, will he be able to avoid ironical remarks such as: "Why, I see you intend catching many seals. I do hope you will not empty the sea entirely!"

[2] This is especially seen in the two forms of harpoons STEENSBY (Polar Eskimos, p. 350) figures from Smith Sound. One, small and made entirely of iron, for seals and walruses; another, large and of bone with iron blades for whales.

are of very different sizes, according to the mode of hunting employed, and the animal pursued (see below). They are used from firm ground — from the ice. As the majority of the methods of hunting on ice by help of the *kapissiniutit* have either entirely gone out of use, or are of less importance owing to the fact that the new methods which have developed after colonisation are far more profitable, the hunter now usually uses his thrusting harpoon only when, on rare occasions, he employs one of the old methods.

Methods and implements for hunting on ice.

The chief methods of hunting on ice in former and recent times have been described repeatedly, but never quite fully. The most exhaustive descriptions are given by RINK in his previously mentioned, well-known work.

As the Eskimo names mentioned below for the different methods of hunting on ice can be translated in part only, the West Greenland version of the names is given. But before proceeding further it will be appropriate to give a few elements of the structure of the Eskimo language. The suffixes *-poq* and *-voq* attached to a verbal root denote that the third person singular is the subject of the verb in the present indicative. For instance, *qâgtarpoq*, he catches (seals) with a net. The suffixes *-pâ* and *-vâ* signify the same tense and subject, but, in addition, denote a third person as object. For instance, *qâgtarpâ* he catches it with a net. The suffixes *-toq* or *-soq* attached to a verbal root denote a substantive: he who performs the action in question. For instance, *qâgtartoq* a hunter who catches (seals) with a net. The suffix *-neq*, also, denotes a substantive, viz. the action expressed in the verb. For instance, *qâgtarneq* net-catching. As it is the form for the third person singular, indicative, which usually occurs in dictionaries, it is often this form which authors have employed when they have wanted to use Eskimo names for hunting on ice. But the above shows that such a formation of words as "*máupoq*-hunting," "*máupoq*-hunter," "*máupoq*-method," etc., is a linguistic monstrosity which should not be used. If one wants to use these terms for the action itself — in this case the mode of hunting — the substantive word for it should be used.

A. Hunting of Phoca foetida at breathing holes on firm ice.

1. *Máuneq*. (Fig. 3). When the sea is frozen everywhere, the seal must make, and keep constantly open, some holes where it can come up for air (*agdlo*, 2). Here a dome of thin, cracked ice is formed, which rises above the surrounding surface of ice, but is often hidden by drifting snow. When the hunter has found the breathing hole, often by the aid of a dog trained for the purpose, he sits down upon a small three-legged stool, and puts his feet upon a skin or upon another and lower stool and watches for the seal to come up to blow. The harpoon shaft with the thrusting harpoon attached, and with a short line, often lies

ready on two forked pegs fixed in the snow. A small snow mound is often built for shelter from the wind. This mode of hunting requires great patience and perseverance. *máuneq* (the "*maupok*-hunting" of the authors) is the most laborious and least profitable method of hunting on ice. It is found only in places where large stretches of sea are frozen over, and only so long as no better expedient exists, but as soon as there are openings in the ice, or when there is a possibility of making nets, the method is immediately abandoned. The Central Eskimo have a number of "seal-indicators," "ear-trumpets," etc., for help when hunting (see BOAS, LYON, PARRY, AMUNDSEN and others). The harpoon shaft is short, at the other end it has an iron pick with which to widen the hole; such a harpoon shaft with an iron pick is the so-called ice-universal-tool *tôq*. This method of hunting is illustrated by HANS EGEDE in his "Perlustration," p. 59.[1] An excellent drawing by LYON is found in PARRY, p. 172.[2]

Fig. 3 (see text).
From a drawing by G. KLEIST.

The hunter is called *máutoq* from *máupoq*, 205, who hunts in this way.

This mode of hunting is now quite obsolete in West Greenland. A form allied to it is still occasionally used: —

2. *Nigparneq*. (Fig. 4) The hunter does not make so many preparations. He takes no stool to sit upon; but does, sometimes, take a low foot-stool to stand upon. He builds no mound of snow for a shelter, but simply stations himself at the breathing hole with the harpoon on the *tôq* in one hand, and the line in the other. Sometimes the line which terminates in a loop is laid on the ice. As soon as the seal is struck, the *tôq* is turned round and the iron pick is driven through the loop into the ice, and this gives an excellent hold on the seal. In contradistinction

Fig. 4 (see text).
From a drawing by G. KLEIST.

[1] FABRICIUS (see "Om de grønlandske Sæle II", p. 86) is my authority for the statement, as I have not access to EGEDE's work.

[2] Neither PARRY nor LYON has descriptions of the methods of hunting which are illustrated so excellently in their drawings.

to *máuneq*, which under the prevailing primitive conditions is the Eskimo's last means of extorting food from the ice-bound sea, *nigparneq* is a chance which is occasionally taken in addition, but is one on which too much preparation is not wasted.

The hunter is called *nigpartoq* from *nigparpoq*, 248, who hunts in this way; *nigparniarpoq*, he is out on this hunt.

Fig. 5 shows the seat of a stool from Hunde Eiland used for *máuneq* or for *nigparneq*. It is made of one piece of board, and incipient cracks have several times been repaired with lashings of sinew thread. The legs have been fastened in by the help of bone wedges.

3. *Itsuarneq*. (Fig. 6). For this two hunters are required. The one lies down on a skin or a sledge on the ice, by the side of a rather large hole, and covers his head with a skin to exclude the day-light. Now he can see the seal in the water and can make signs to his comrade when the seal is below the hole. Usually he makes a certain movement with the one foot (sometimes, and rarely, he cries *qâ*, *qâ!* or *kê*, *kê!*) The other holds a small harpoon with a very long pole, 10—12 metres, in a smaller hole next to the large hole. At the base of the shaft there must be some small pieces of bone, which allure the seal by their movements. *Itsuarneq* is practised in places where it is not very deep, especially in small sounds between islands where currents are felt, and where, consequently, there is much animal-life. It is in a way only a transformed method of fishing, the spear being provided with a loose head and a line, corresponding to the larger and stronger animals which are to be caught.

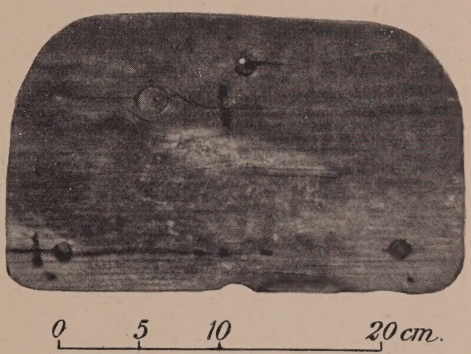

Fig 5. Seat of a stool for *máuneq* or *nigparneq*.

According to Holm, for this mode of hunting a special harpoon is used on the east coast, which differs in its construction from all the other known forms by the toggling piece being hinged (see Holm, Pl. XVI.) At Disco Bay, small almost bisymmetrical forms such as those shown in Fig. 11, k—m have especially been used. This mode of hunting is no longer practised at Disco Bay, but is said to be still in use in the northernmost parts of Danish West Greenland. On the other hand, a harpoon on an improvised long pole is sometimes used here to catch *Hippoglossus vulgaris* from a boat in comparatively shallow water.

The hunters are called *itsuartut*, from *itsuarpoq*, 116, he peeps through a narrow hole into something wider. *itsuartorpoq* or *itsuarniarpoq*, he is in the act of hunting by this method. The long harpoon pole is called *itsuartût*.

4. *Quasasiorneq* or *quasalineq*. Hunting on glassy ice. When suddenly extremely cold weather and calm sets in, for instance at the heads of fjords or off the coasts, when the ice there had been broken up and had drifted away, then the new ice immediately becomes dry and quite glassy, so that no snow can accumulate upon it. Then the breathing holes are easily found, and as there is no snow to creak under the feet, the seal cannot hear the footsteps, especially if shoes with the hairy part outside are worn over the boots. Then several hunters in company place themselves at various breathing holes, each with a *tôq* and a thrusting harpoon with a short line attached. A hunter can run to and fro between several holes. The gain is divided among the hunters when the day's work is finished. This method can give very good results and is therefore still used whenever an opportunity presents itself. But a hunter may very well use his common kayak-harpoon for this.

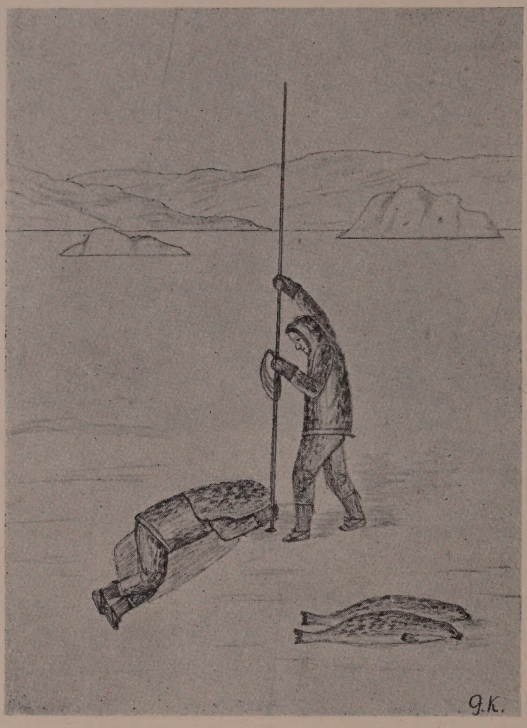

Fig. 6. An *itsuarneq*.
From a drawing by G. KLEIST.

Figured by EGEDE (l. c.); moreover, an excellent illustration by LYON is to be found in PARRY, p. 173.

The hunters are called *quasasiortut* from *quasasiorpoq*, 154, he practises hunting on glassy ice.

5. *Aorneq*. In the spring, when the sun is higher in the heavens and the ice is thick, and its surface, in addition, covered with a thick layer of snow, the seal widens its breathing hole and comes up upon the ice, partly to be delivered of its young, but more particularly to sun itself. Formerly the hunter tried to creep up to it and thrust the harpoon into it. The harpoon shaft was fastened to a small sledge which had often a small screen of white skin to hide the hunter. Or, also, he tried to imitate the movements and the appearance of the seal, and took with him, for instance, the paw of a seal, or an artificial seal claw, with which to scratch upon the ice. As the whole thing was a slow affair, which, after all, in the majority of cases ended in the seal

becoming suspicious and disappearing in its hole, this method has now, since the introduction of rifles, been entirely abandoned, and is replaced by *ũtorniarneq*, described below.

Figured by EGEDE (l. c.); moreover, an excellent illustration by LYON is to be found in PARRY, p. 173.

The hunter is called *aortoq* or *aorniartoq*, one who goes out on this hunting expedition, from *aorpoq*, 37.

6. *Ũtorniarneq.* Otok-hunting (from *ũtoq*, 406, designation for a seal that has come up upon the ice in spring). (Fig. 7).

The hunter has his rifle lashed securely to the pushing sledge with its screen adapted to the use of the rifle. (Description is given below on

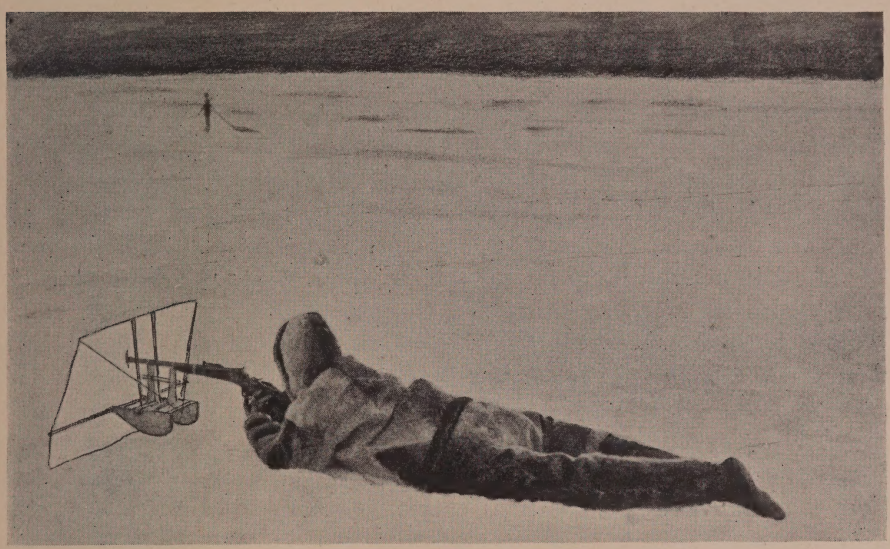

Fig. 7. A *tâlutartoq.* Otok hunter with shooting screen creeping on the ice.

pp. 179 sqq). He approaches as near as possible to the seal, makes frequent halts, and observes it with a telescope. Finally he lies down, pushes the sledge before him until he is within convenient distance of the seal and then shoots, using the pushing sledge as a rest for the gun. This mode of hunting — in which the harpoon is no longer used — gives good results and is used everywhere in the northern part of West Greenland.

B. *Qâgtarneq* (from *qâgtarpoq*, 125) or *napítorneq* (from *napítorpoq*, Supplement, 32, he catches seals with a net under the surface of the ice).

Net-hunting on ice. The harpoon is not used in this mode of hunting either; it is mentioned here for the sake of completeness, and because it is at present by far the most lucrative of all the methods

of hunting employed in the northern part of Danish West Greenland, and there determines the greater collective and individual prosperity of the inhabitants in comparison with those of the southern districts. The ice-net is from 5—8 metres in length and from 2—3 metres in width and is made of the cheapest string available, so as to be of very little value, because it is very liable to get lost; but, on the other hand, it is paid for if it catches a seal once only. At the lower edge of the net a few stone sinkers are fastened, and at the upper edge there is a fairly thick line. The net is often set at right angles to the coast, especially off headlands, where currents occur, or in the neighbourhood of openings in the ice caused by currents or around the foot of icebergs of moderate size. In order to set the net three holes are made with the *tôq*, the upper line of the net is tied securely to the blade of the *tôq*, and then the latter is thrust into one of the holes and is given a push in the direction of one of the other holes. If the buoyancy of the shaft is properly calculated in relation to the weight of the iron, the point of the shaft appears by itself out of the hole, and in this way one can "sew" from hole to hole, even if the ice be above one metre thick. The net hangs down like a curtain, and the free ends of the upper line as well as a cord from the middle of the net are fastened to a small fragment of ice, or to a small lump of snow upon which water is poured to cause it to freeze fast. Every other day the net should be inspected, which is done by breaking open one of the holes. When a seal is caught it is taken out, and the net is reset, unless it has got so entangled that this cannot be done in the severe cold. This mode of hunting can be practised by everybody, and with the help of sledges and several nets one hunter may utilize large areas. Besides *Phoca foetida*, the ground seal, *Phoca barbata* is also sometimes caught in these nets.

C. Hunting of seals and small whales at the ice-edge and in openings and cracks in the ice.

1. *Savssarneq.* (Pl. X). When severe cold sets in suddenly, and with calm weather, it frequently happens that a shoal of White Whale or Narwhal is cut off from the open water by a broad belt of ice. The whales soon become exhausted owing to the difficulty of breathing, and if they find an opening in the ice they all resort to it, and cannot leave it again. Here, from 20 to several hundred animals may be found at such an opening. If this opening is small the animals may lie closely together; the Narwhals, for instance, pushing their way to the edge and placing their tusks upon the ice. In calm weather their moaning may be heard for miles round, and the steam from their breathing rises from the hole into the air, so that such a *savssat* is soon discovered. According to the hunting by-laws in force it is the joint property of the surrounding settlements, and the finder gets a reward at the

public expense, and everybody may secure for himself the right of possession by thrusting a harpoon into an animal. As the animal cannot get away, the form of the harpoon is quite immaterial, and it is only

Fig. 8 (see text). From a drawing by G. KLEIST.

Fig. 9. A *qamaneq*. From a drawing by G. KLEIST.

necessary that a small piece of line be attached to it in order to identify it. One by one the animals are killed — formerly with lances now usually with guns — drawn up, and driven away on sledges, and this may be continued till the whole flock is captured, or till the weather turns and the ice is broken up, when the animals are set free.

A hunter who practises this mode of hunting is called *savssartoq*, from *savssarpoq*, 315, he practises *savssarneq*.

2. An old and now abandoned method of hunting seals in openings in the ice and in "current-holes" consisted in the one hunter trying from the edge of the opening to attract the attention of the seal by scratching on the ice, whistling, etc., while the other, in a kayak, stole upon it from behind and harpooned it (Fig. 8).

3. *Qamaneq*, 129. Stalking at the edge of the ice. (Fig. 9). The hunter hides himself at the edge of the ice among the hummocks or behind a cover of piled-up ice floes, and waits there till the seal appears, when he shoots it and carries it off in a kayak. This method gives good results where *Phoca barbata* is concerned.

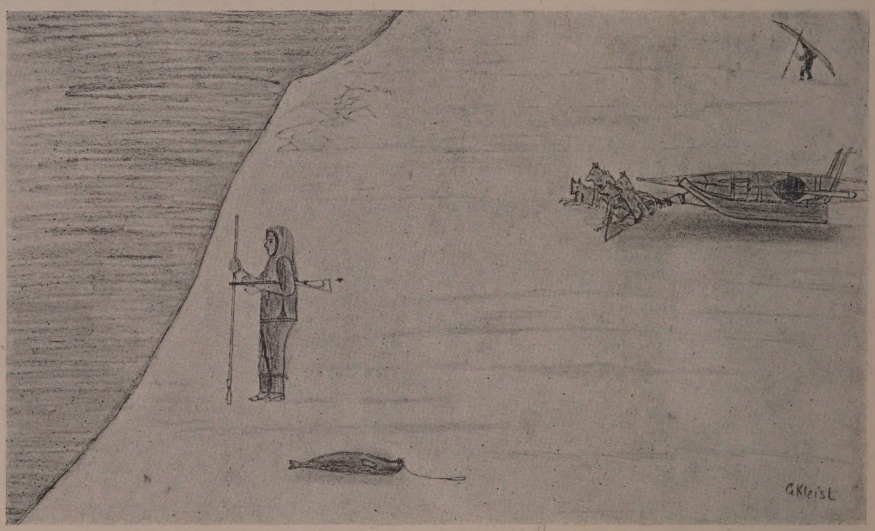

Fig. 10. A *sinâliarneq*. From a drawing by G. KLEIST.

He is lying in wait for seals is called *qamavoq*, 128, the hunter thus hiding *qamassoq*.

Exactly the same names are used in other districts of the country for hunting *Phoca groenlandica*, but that takes place in open water. In places where the saddleback seal usually lives, a cover of stone and peat is made at the coast, often upon a projecting rocky point, from which the sea opposite and the bays on either side can be fired upon. A locality suitable for this mode of hunting is called *qamavik*, 128, and the latter is a common place-name on the west coast.

4. *Sinâliarneq*. Hunting at the ice edge (Fig. 10) is the method, next to net-hunting on ice, which gives the greatest returns in the northern part of Danish Greenland. Conditions suitable for this kind of hunting

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CORRIGENDA

Page 135, line 10 from top and line 10 from bottom, for *pushing sledge* read *shooting sledge.*

arise every time stormy weather makes rents in the otherwise continuous covering of sea-ice, so that a narrower or broader belt of firm ice is formed along the shore. But it is especially when the ice has become old and thick, so that it is difficult for the seal (*Phoca foetida*) to keep its breathing holes open, that it resorts to such channels. That is to say, spring time is most favourable for this kind of hunting, and the conditions are mostly found at those settlements which face the open sea. Normally the conditions are not found within the fjords, here *otok*-hunting is practised, but during spring the ice-edge moves further towards land every stormy day. *Sinâliarneq* is employed in the capture of not only *Phoca foetida*, but also *Phoca barbata*, walrus, White Whale and Narwhal.

When hunting at the ice-edge is being carried on, netting is suspended. Partly because it is too insecure to use nets, and partly because the hunting gives too small returns, as the seals now live in the openings in the ice; besides, the thick ice makes it difficult to look to the nets.

For hunting at the ice-edge the kayak can rarely be dispensed with. It is only rarely that the hunter goes out into the openings in the ice to pursue kayak-hunting with harpoon and float, but the kayak is necessary to cross the open places and the cracks, and to fetch the animal shot, etc. The hunter carries the kayak on his head to the edge of the ice. Such a man is called *maqigtoq*, 195. Or, if he has dogs and sledge and the ice is not too closely packed, he drives the kayak to the ice-edge.

As it often happens that the edge of the ice is blocked up with a regular range of loose floes of larger and smaller size which are often piled up into huge, irregular heaps, courage, cleverness and experience are here necessary in order to be able to make one's way and to convey the fragile kayak, and accidents frequently occur. Often the catch is so valuable, and the conditions of transport so bad, that the hunter must refrain from carrying the whole animal with him, and be content to take the skin and the blubber which can be realized for cash.

A hunter who hunts at the edge of the ice is called *sinâliartoq* from the verb *sinâliorpoq*, 327.

5. Hunting in Ice-fjords.

In fjords where the in-land ice pushes out to sea as calving glaciers, the conditions are suitable for quite a similar mode of hunting. By the continuous breaking off and falling down of the end of the glacier a channel is kept open here, while the remaining and outer part of the fjord may very well be covered with firm ice for a longer period. As there are excellent conditions of life for molluscs and fishes in front of such a glacier the place is also frequented by seals, which resort to the channel in front of the glacier instead of making breathing holes. It is natural that the ice here is very much packed, and the danger of making one's way is increased by the ever threatening edge of the glacier, which, by constantly breaking off and falling down, causes general

disturbance. Furthermore, these localities are usually situated at a great distance from the fixed winter dwellings, so that the game has to be transported a long way. Owing to these reasons this mode of hunting is probably not turned fully to account, even though it is nowhere neglected; but it is usually abandoned as soon as there are possibilities of other modes of hunting, and the hunter who carries on ice-fjord-hunting is well nigh regarded as a specialist.

6. *Qâgtarneq, napîtorneq.* Net hunting in openings in the ice caused by currents. In large openings in the ice which are caused by currents, and which may consequently be expected to be kept open the whole winter, there are possibilities for practising all the various kinds of hunting which are carried on in openings in the ice. But, in addition, there are here conditions for net-hunting: both of seals of all kinds and of White Whale and Narwhal. But as this hunting requires large nets which involve a considerable outlay of capital, and some risk, it is only exceptionally that the Greenland hunter can practise the method. It is usually carried on by well-to-do natives who are in the employment of the administration or of the trading service, and sometimes by Danes.

Description of old thrusting and throwing harpoons from West Greenland.

Figure 11, *a* is a very carefully made harpoon, perhaps for hunting on ice, or, what is more probable, for hunting White Whale from kayaks. The ventral side is slightly, and the dorsal side markedly, carinate, so that a transverse section below the line holes shows a pointed arch. Line holes ventral. Toggling butt slanting upwards, forming a short, pointed, undivided terminal barb. Shaft-socket large, edges not much rounded. Blade horizontal, riveted, seems to be made of native telluric iron. Antler. Disco Fjord, in an old grave.

Fig. 11, *b*, A large and somewhat clumsily made thrusting harpoon of antler. The blade is of iron, almost eaten away by rust, horizontal. The line hole runs through the harpoon in the horizontal plane. The toggling butt is cut aslant, undivided, worn and damaged, so the shaft-socket is irregular.[1] Sarqaq, the district of Ritenbenk.

Fig. 11, *c*, A large, well-made White-Whale-harpoon, no doubt of a whale's bone. The blade, which had been of iron, was intentionally removed before the harpoon was discarded. One lateral barb, fragmentary, and on the opposite side, an oblique, terminal barb. Line holes ventral. Sarqaq.

[1] A similar harpoon from West Greenland is illustrated by THALBITZER (Fig. 101), but has been misunderstood, being taken for a head-piece of an adze.

Fig. 11, *d*, A large, well made White-Whale-harpoon (of a whale's bone?). Large lanceolate iron blade, two lateral barbs, toggling butt fish-tail shaped. Kronprins Eiland.

Fig. 11, *e*, *f*, *g*, *h*, Small symmetrical throwing harpoons for seals,

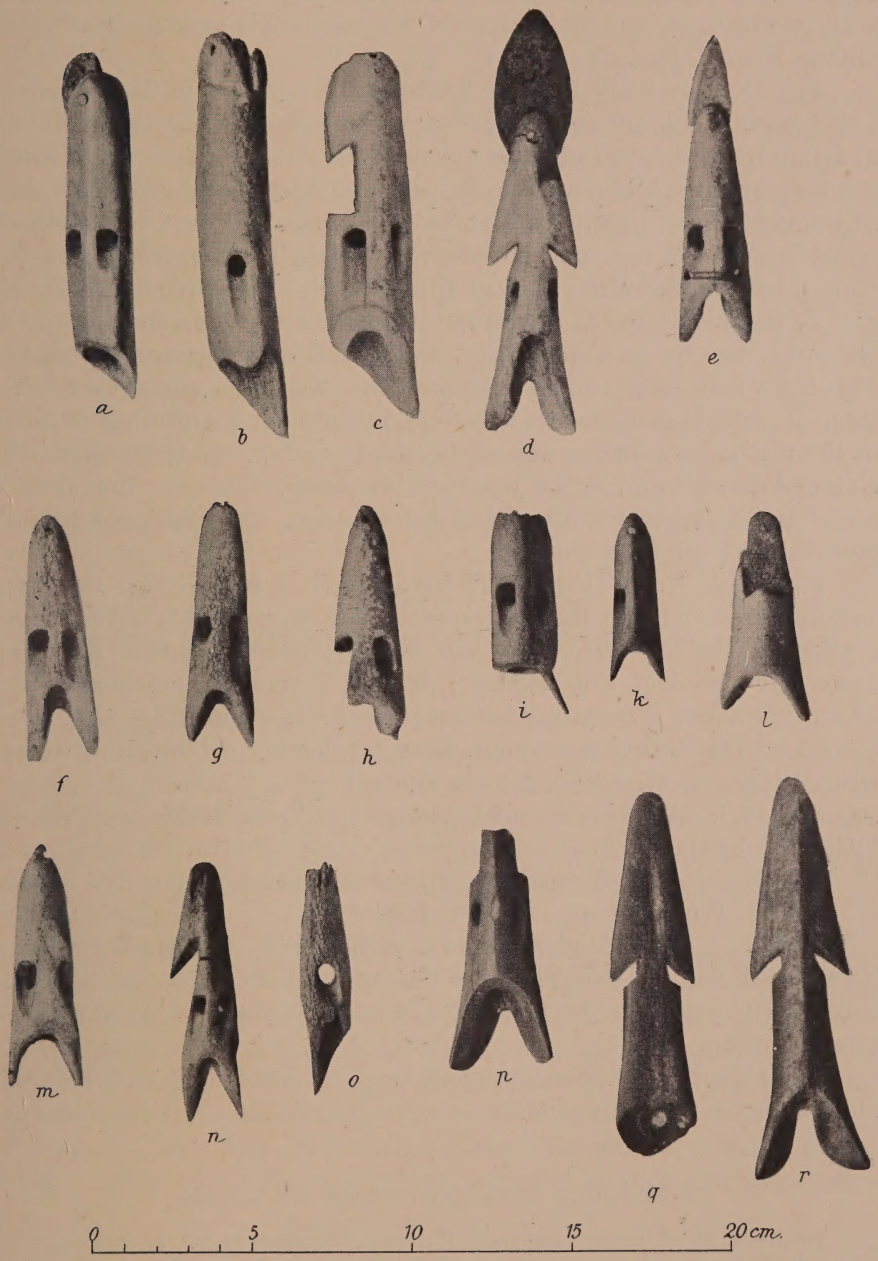

Fig. 11. Various throwing and thrusting harpoons found in graves or in ruins of houses in the districts around Disco Bay. For further particulars see text.

of antler, without lateral barbs, and with short, bipartite terminal barb. They have all had iron blades; *e* is cracked at the shaft-socket and has been repaired with a lashing of sinew thread, which was sunk in a deep groove. Later on a splint has gone from the back so that the line hole has become bared. Then the iron blade was removed and replaced with one of bone, and the harpoon became a boy's practising harpoon. Hunde Eiland, Disco Bay.

Fig. 11, *i*, A small harpoon of very rare form, doubtless of ivory. The hinder end below the shaft-socket is cut across, with the exception of a thin point directed obliquely backwards. It has had a blade which has been intentionally removed after a fracture had been made by boring, so the blade must be supposed to have been of stone, and to have been riveted. None of the Greenlanders with whom I have spoken had previously seen similar forms; but in "Antiquarisk Tidsskrift" for 1852—54, part 3, there is on p. 427 a figure of a similar harpoon, belonging to the National Museum in Copenhagen, which is however wrongly recorded as being a lance-point. It has also a stone blade which is riveted. Nothing is stated about its size; but to judge from a throwing harpoon of the usual size which is figured by the side of it, the specimen in the National Museum must be considerably larger than the one figured here. Greenlanders surmise that my specimen has been used for salmon catching or for *itsuarneq*.

Fig. 11, *k*, *l*, *m*, Three small harpoons of a form which was very common around Disco Bay; *k*, especially, is very small. With the exception of the line hole there are two symmetrical planes in them. They have all had iron blades. Similar specimens are figured by SWENANDER and MASON. Greenlanders are of opinion that they have been used for *itsuarneq*, perhaps, also, for salmon catching. *k*, ivory, Disco Fjord. *l*, *m*, antler, Hunde Eiland.

Fig. 11, *n*, A carelessly made harpoon without blade, for practice by boys. Sarqaq.

Fig. 11, *o*, A small greatly damaged thrusting harpoon of similar type as *b*. Whale's bone. Hunde Eiland.

Fig. 11, *p* is the hinder end of a rather large, well-made throwing harpoon; it has had lateral barbs similar to those on *d*, but has probably been broken in the making, as it does not appear to have been used. Sarqaq.

Fig. 11, *q*, *r*, Unfinished harpoons, discarded before they were finished. Shaft-socket is entirely wanting. *q*, Hunde Eiland, *r*, Ujarassugssuk.

A shooting harpoon for use on kayak.

While Greenlanders are usually very conservative and afraid of trying anything new, there is one family GEISLER on Disco who err in the opposite direction. The present head of the family, LUDVIG

GEISLER, has more Danish than Eskimo blood in him, but he speaks only the Eskimo language and lives and thinks as an Eskimo. He is clever at all kinds of work in which an Eskimo hunter is expected to be an expert; but, in addition, does not shrink from any kind of European handicraft, not even the repairing of watches. His specialities are ivory-carving and inlaying in wood, and the technique and patterns employed are of his own invention. The majority of his tools are old-fashioned Eskimo ones; for instance, he still uses a bow-drill. Ludvig is also an excellent hunter of White Whale. Quite recently he has constructed an iron harpoon with hinged point to be discharged from an old short-barelled muzzle-loading gun, exactly like the modern whaling harpoons, the stem being bipartite, and the line fastened to a ring, etc. It has been tried, and can be discharged to a greater distance than a throwing harpoon can be thrown, but requires skill on the part of the kayaker. It seems as if the only difficulty is to get a suitable line. Rawhide lines are not long enough, and hemp lines do not run easily enough from the line-rack. He intends to try a thin metal-wire.

Though LUDVIG GEISLER's invention, concequently, is not quite finished, I mention it here thinking it may be of interest in the future. Many of the improvements in kayak and sledge made by the GEISLER family have gradually spread, and perhaps this new harpoon will also prove a success.

Harpoons for hunting Right Whales [*Balæna mysticetus*].
(*Tūkait arfangniutit*).

As is well known the West Greenlanders, before colonization, had hunted big whales from *umiaq* like their ancestors in Cumberland Sound and Alaska. The earlier authors describe the hunting rather exhaustively, for instance EGEDE (cited *in extenso* by MASON on p. 239). FABRICIUS has described *Megaptera boops* hunting (Zoologiske Bidrag, p. 63), but as regards *Balæna*-hunting he refers to EGEDE, as he himself has not witnessed it.

So far as I know, the special implements used for this kind of hunting have never been mentioned from West Greenland;[1] still less have they been described. They have been collected, however, as in the Museum für Völkerkunde in Leipzig I have seen whaling harpoons — collected in West Greenland by the Moravian Brethren — quite similar to those which I shall describe in the following pages; and, if I remember rightly, I have also seen them in the National Museum in Copenhagen. Moreover, THALBITZER has recently figured and described a

[1] HOLM (p 84) describes the hunting of whales by East Greenlanders, and says that for this "bone points two feet in length and stone points 8 inches in length" were used as harpoons. Are not hereby meant foreshaft and harpoon with stone edge, respectively?

specimen from *Nûssaq* (western end of the peninsula of *Nugssuaq*, north of Disco) which is found in Pfaff's collection in the Stockholm Museum. THALBITZER (Fig. 102) has characterized his piece "head-piece of an adze" and though his description is incomplete, so that neither from the figure nor the description can it be seen if there has been a shaft-socket, yet I am convinced that the piece in question is a Right Whale harpoon.

Of my two specimens (see Fig. 12), A originates from Hunde Eiland and B from Kronprinsens Eiland, both in Disco Bay. Both are of whale's bone, and both are old and their surfaces partially corroded. They are both rather dark in colour and have been lying in a morass.

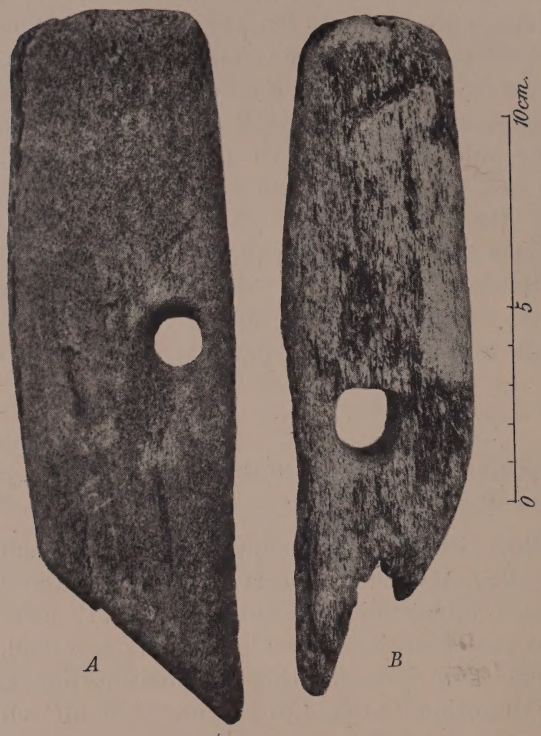

Fig. 12. Two whaling harpoons. Disco Bay.

On A, the side which has been photographed and the toggling butt are best preserved. The dorsal edge is 18 cm. in length, the ventral edge, 14; the point where it is thickest, which point lies in the ventral half, is about 2.5 cm. The line hole is advanced close up to the dorsal edge, and here there is a distinct line groove directed obliquely backwards, the hole is 22 mm. in diameter, edges well rounded, especially in those furthest back. The shaft-socket is advanced close up to the ventral edge; it is 14 mm. in diameter, about 3 cm. deep and well rounded at the bottom. The toggling butt is cut aslant. The blade slit lies in the vertical plane. The blade has been neither riveted nor lashed, but merely set tightly into the slit, and, from the pressure of the blade, the harpoon has at last cracked on the ventral side.

On B, the side worse preserved has been photographed. It is somewhat narrower and thicker than the former one. Here, also, the line hole is situated nearer to the dorsal side, but not so near as in A. Of the oblique surface of the toggling butt only the part from the ventral side and up to the shaft-socket is preserved. Here have been no line grooves, but the line holes have their backward and downward

directed edges — not the others — carefully rounded. The blade slit with the part around it is entirely preserved; it is 2.5 cm. deep and 3—4 mm. wide. Here, also, have been neither rivets nor lashing.

Hitherto, I have in vain sought information of the Greenlanders living around me as to what the wanting parts, the blade, line, etc., look like. The hunting of Right Whales by the Greenlanders declined shortly after the beginning of the colonization; as the Danes erected some whaling stations furnished with modern implements. Yet I have no doubt that traditions still exist, and persons who are expected to have knowledge of the subject have been mentioned to me by name, but hitherto I have had no opportunity of meeting them. Everybody knows the main features of the hunting: The umiaq was rowed by men with kayak paddles, who faced the bow. The numerous large bladders lay inflated in the boat, they often consisted of whole skins of *Phoca barbata*, either singly or two or more tied together. The harpoon was thrust from the boat and the hunters tried continually from boat and kayak to attach more and more floats till the whale became so exhausted that it could be killed with lances. Consequently, the hunting is conducted in very much the same manner as that described by Murdoch (p. 101) from Point Barrow.[1]

In his book "The Eskimo of Baffin Land and Hudson Bay" Boas figures from Cumberland Sound a very interesting old whaling harpoon with its accessories which is, consequently from Eskimo tribes whose material culture must be said to agree most closely with that of the Greenland tribe. Boas does not describe it very fully, but refers to a model previously described by him. This paper is not accessible to me, but his figure is so excellent that almost all details can be seen on it. I take the liberty of reproducing it here (Fig. 13).

This big harpoon, which is about 18 cm. long, is very interesting. As with the Greenland harpoons described above the line hole is advanced close up to the dorsal edge; and, as shown in my Fig. 12, B, it is situated rather far backwards. The hinder end is extended into a notched barb. While the hinder part of the harpoon has its greatest width in the vertical plane, the fore end is wider in the horizontal plane, with edges

[1] Besides the floats intended to be used for the harpoons there was a layer of common bladders which were intended to keep the umiaq afloat in case it should be upset or broken to pieces by the whale. This is also mentioned by the older authors who have been eyewitnesses of the Greenlanders' whale hunt, and is told by Greenlanders even to-day. But Steensby (Eskimokulturen, p. 65) declares that this "must beyond doubt be due to misunderstanding," "because an umiaq can do without such an improvement," and "that such circumspection is quite imprecedented among the Eskimos."

Against this it may justly be argued, that it is a very strange thought that such people as Egede, Saabye and Fabricius should not understand the Greenlanders, that a wet boat-skin sinks like a stone, and that, really, the Eskimo do not thoughtlessly sacrifice their lives any more than other living creatures do.

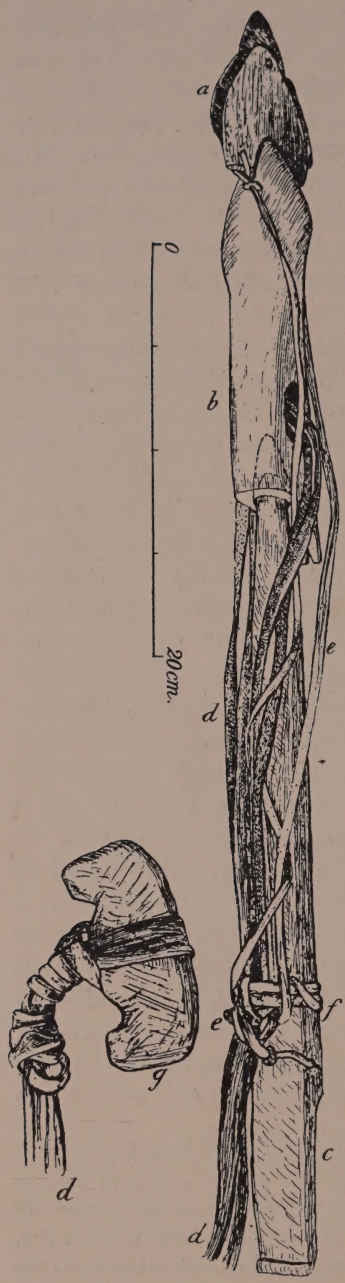

Fig. 13. Whaling harpoon with foreshaft, Cumberland Sound (After F. BOAS). *a*, Blade of bone or ivory with cutting edges made of three pieces of iron; *b*, harpoon with dilating edges; double harpoon-line of strong rawhide thongs, fixed to a strong toggle (*g*) which is fastened to a number of sealfloats and to a large drag; *e* is a light thong for securing the loosely inserted blade.

sloping forward. Then a loose blade is inserted at right angles to the fore-edge of the harpoon, and, consequently, again in the vertical plane. The blade appears to be of bone and in the edge of this are inserted three cutting edges of metal (or stone?). With the thrust, therefore, the first result is a long vertical wound the edges of which are immediately dilated by the fore-edge of the harpoon itself, so that ample room is made for the large harpoon. The blade is neither riveted nor lashed, but loosely inserted; in order that it should not be lost a line is spliced at each corner. The harpoon-line itself is of very thick, double rawhide-thongs 2.18 metres in length. It terminates in a very strong toggle of peculiar shape. The foreshaft consists of a piece of bone about 40 cm in length. The author merely states that it is spliced to the wooden shaft which is 2.60 metres in length, but how this can be achieved cannot be seen from the figure. If it has been lashed, as the prominent ridge at the bottom might indicate, then this fastening of the main line by aid of the blade line is impossible, but perhaps this has been done merely for the purpose of putting it by, or for transport. But if it has been done intentionally, then the foreshaft cannot be attached to the wooden shaft, but must be loosened together with the harpoon and remain attached to the latter. The floats have been held together by a line which has been fastened to the toggle by means of a loop; some indentations in the toggle preventing the loop from slipping off unintentionally.

III. Harpoon shafts, Throwing sticks and various other Accessories of kayak weapons.

For throwing harpoons which are flung from kayaks two different forms of shafts are used: —

1. *Ernangnaq*, 71, the feathered shaft or little shaft, lighter and shorter than the following, and provided at the hinder end with two parallel plates of bone to balance and steer it.

2. *Unâq*, 395, the knobbed shaft or long shaft, generally longer and heavier than the foregoing, without feathers at the hinder end, but often with a bone knob to balance it. In some districts *unâq* is as short and thick as a lance-shaft.

Both these harpoon shafts are made preferably of red drift-wood (*pingeq*, *Larix* sp.), while that of the shorter and thicker form of *unâq* is often made of paler coloured and also lighter wood (*Picea* sp.).

Shafts for bladder-dart and bird-dart are always made of light, and also pale coloured wood (*unarsivik*, 395, *Picea* sp.), lance-shafts of any kind of wood at hand.

All these shafts with the most important of their accessories and the terms for these, are described fairly explicitly by Fabricius, and later, amongst several others, by Nansen. Collocations of the Greenland terms are found in Ryberg.

In order to enable one to throw these weapons far and surely a throwing stick, (*norssaq*, 255) which is a sort of sling contrivance and increases the length of the arm, is used. The form and construction of the throwing sticks vary, partly according to the shaft for which they are intended, partly according to the use and wont of the district concerned and the caprice of the user. In accordance with the shaft for which they are intended, two main types, connected with an intermediate type, can be distinguished. A little behind the centre the long and heavy *unâq* has two ivory pegs which fit tightly into a couple of holes in the throwing stick, so that a jerk is necessary to loosen the throwing stick when the weapon is thrown (see below description to Fig. 14, *A*). Ordinarily nowadays, this throwing stick also fits the lance, but this is often thrown without a throwing stick, and then various finger-rests of bone are fixed in the shaft, and thus it was formerly with the *unâq* also. This throwing stick has, then, two holes and a groove running through its entire length for the reception of the shaft.

The light darts must be such that they can be thrown further, and the bird-dart, especially, such that it can be thrown high. At the hinder end they are provided with a button of hard bone, upon which the throwing stick has to act. Consequently, the upper end of the stick is curved slightly upwards, and here is inserted a bone nail, the point of which acts on the rear button of the shaft. The remainder of the throwing stick has a groove in which the shaft lies; but there is no peg in the shaft and, therefore, no hole either in the throwing stick. Consequently, a dart-shaft cannot balance in the groove of the throwing stick without being held fast with the fingers. This a *unâq* can do, as the friction of the pegs is great enough to hold it. In order to save space on the kayak the throwing stick always fits both forms of dart.

To the *ernangnaq* belongs a throwing stick the upper end of which is arranged as on the throwing stick for a dart, while the other end is provided with a hole just as on throwing sticks for *unâq*. The upper end then acts upon a piece of bone situated at the root of the feathers. Sometimes, however, an *ernangnaq* is also seen provided with a *unâq*-throwing stick, but then it is a little heavier than usual.

Fig. 14. Throwing sticks. A for *unâq;* B-D for darts.

There is, then, a decided relation between the weight of the shaft and the length of the throw on the one hand and the type of the throwing stick on the other hand. I am not in a position to offer any information as to why this must be so, as I cannot use these instruments myself, and the Greenlanders, when questioned, cannot explain it either, but content themselves with declaring that it must be so.

The richer or poorer ornamentation of the throwing sticks with bone edgings, the arrangement of finger-rests and the details of construction vary according to the user's supply of bone of superior quality, his working ability and taste, and according to local use and wont.

Figure 14, *A* shows a somewhat old and very well manufactured throwing stick of drift-wood intended for *unâq*. The form is the one most general here-about for the time. Here, on the whole, *unâq* is mainly used; in other districts chiefly *ernangnaq;* but both can also be seen indiscriminately used in the same settlement.

The terminal bone-piece (*qulâ*, 159) is of a whale's bone, it has a long tenon which is held fast to the stick by three bone pegs placed transversely. The hole is U-shaped, and the top edge is carefully rounded, so that it can easily release the bone peg on the shaft. The shaft groove (*ilugdlinera*, 92) is about 1 cm. deep, and carefully finished, both in wood and in bone mountings. The handle (*tigordla* of *tiguleq*, 363) has two well rounded notches to receive the thumb and forefinger. From these, downwards, the edges have mountings of bone bands, and on the lower part is an end-piece (*kingora*, 182) all of a whale's bone, and riveted with bone nails. The hole (*putua*, 303) is oblong, with its greatest diameter across, in it is fixed a bone ring which is also held fast with bone pegs. Sometimes this hole is lined with shreds of gull quills, which are sewn through a circle of small holes round the larger hole.

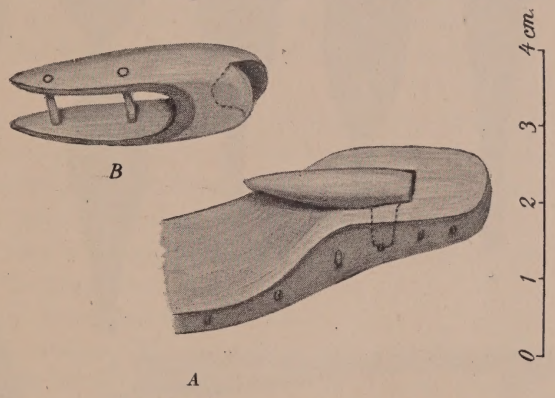

Fig. 15. Divergent construction of *qilik* (A) belonging to the throwing stick B in the preceding figure, and of its *qaquiseq* (B) on the hinder end of the dart shaft.

North-west Disco, on the shore; this throwing stick has drifted for a long time, as there are large holes in it from the boring of *Pholas*.

Figure 14, *B* is a greatly damaged throwing stick for darts. The lower end is entirely missing and the under side is very moss-grown. The upper end differs greatly in construction from the usual forms, in which the throwing stick simply has a bone pin (*qilinga*, 143) fixed obliquely, which acts on a bone button cut transversely, or at most slightly indented, at the end of the shaft (*qaquisâ*, 123). Here, on the contrary, the *qilik* (Fig. 15, *A*) is provided with a right-angled branch which goes down into the stick, which here, therefore, is not exposed to the danger of splitting, and the *qaquiseq* (Fig. 15, *B*) is shaped like opened lips, with a rounded hollow between them. Both the ends and the edges have had bone mountings, the bone pegs of which still remain. Hunde Eiland, in an old grave.

Figure 14, *C* is a not particularly well-made throwing stick for a dart. The *qilik* has split the stick and has fallen out, and there seems

to have been no other bone mountings. The throwing stick, however, is of interest in another way. It had been found somewhere here at Disco Bay on the remains of a kayak deposited at an old grave; whence the finder had transferred it to his own kayak, where it had been put in a hidden place as an amulet which should insure a good haul. He

Fig. 16. Various implements for use on the kayak and details of same. For further particulars see text.

was dissatisfied because an older relative, whom he had to regard, demanded that it should be produced. He was discontented at having to part with it, and with the lecture on paganism and superstition which his older relative gave him in exchange.

Fig. 14, *D* is a greatly damaged throwing stick for darts, intended for a left-handed person. It has been very well executed and has had

bone edgings the whole way round. The furrow is deep, the *qilik* has fallen out and the notch for the forefinger is so deep that the finger almost entirely disappears in it. A transition to the forms where this hole lies quite inside the edge, which occurs with special frequency among the American tribes.[1]

Hunde Eiland in an old grave.

Fig. 16, *a*—*e* are some forms of old "feathers" (*sulûssai*, 346) for *ernangnaq*, all of a whale's bone. All have holes for the nails which held them in place, and some, in addition, have a hole above for a strong bone nail, thereby adding increased strength. The hindmost point is often ornamented, in that, here, a circular dial is marked out, or else it is cleft like a fish-tail or a seal's hind-quarter. The lowest point of the stem, also, is frequently more complicated, and so arranged as to be partly grooved down into the shaft. On *d* the stem is broken, on *e* the fore end is sharpened, and the *sulûssaq* is used in that form as a skin scraper (*kiliortût*, 177).

a, The shore, North Disco; *b*—*c*, Hunde Eiland; *d*, Skansen; *e*, Sarqaq.

Fig. 16, *f*—*h* are various forms of ice-beaters for kayak (*sermîaut* or *sermêrsiut*, 319) all of whale's bone, *i* is the broken off handle of a fourth. Often, for fun, they have the form of a sabre, see for instance Fig. 16, *h*. Sometimes they were shaped like a dagger and were then also used for giving the *coup de grâce* to the wounded game.

f—*g*. Hunde Eiland; *h*—*i*. Kronprinsens Eiland.

Fig. 16, *k* is the right leg (*niulua*, 250) for a line rack (*asatdlut*, 43). This is of wood, below is a crook for the harpoon-shaft to rest on, above, it is cleft for the reception of the bone ring (*qiláungussâ*, 142) of the rack. Disco Fjord.

Fig. 16, *l* is the one piece of that angle of bone (*pâguai*, 269), which lies beneath the great bladder (*avataq*, 62). The two rods have been riveted together with iron nails. Into the other end goes that piece of line which holds it to the bladder, out of a terminal hole with well-rounded edges, while the knot is kept in a lateral hole. This peculiar construction has great significance, because the angle of bone has been inserted under that cross-strap of the kayak which lies just behind the hunter, and cannot from here be washed down by the beat of the waves; but immediately the harpoon has struck, the bladder must be thrown out, and in such a manner that no obstruction is possible. Broken, disinterred pieces of a *pâguaq* are sometimes misinterpreted for the handle of a bow-drill (as by Ryder, p. 323), but a drill-handle has not this construction, the holes being simply lateral.

Hunde Eiland. Whale's bone.

[1] Throwing sticks with a hole inside the edge for the insertion of the forefinger are also found in Greenland. But although they give a firmer grip of the throwing stick, they are not liked, especially in the northern parts of the country, because the hunter prefers to keep on his mitten in throwing.

Fig. 16, *m*—*p* are various pieces of end-mountings (*kavdluat*, 172) for the paddle (*pautit*, 273). The long, narrow socket is mainly produced by boring. The paddle-blade (*mulinga*, 214) has here a tenon (*kâgúnera* from *kâgúpâ*, 171, he connects two things by inserting the one into the other) which is held fast with bone pegs. At the side are two smaller holes, into which the edge-mountings of the blade (*sinaussait*, 327) are mortised.

All are of whale's bone, *m*, however, is more compact in structure than is general with this material.

m, *o*, *p* — good workmanship, Disco Fjord; *n* — clumsy, Kronprins Eiland.

The paddle to which *o* and *p* belong has been found by an old grave in Disco Fjord. It is 1.8 metre long, the handle (*tigulê*, 363; *tasiait*, Supplement, 48) is elliptical in transverse section, 2×3.5 cm. thick, the blade at the *kavdlo* is 6 cm. broad in the wood, and 8 cm. including the edge-mounting. The paddle with all its bone mountings weighs, when dry, 700 grammes!

On paddles from the Central Eskimo a circular band is sometimes seen at the junction of the blade and the handle. It has to keep off from the mitten the drip from the blade. For the same purpose, I have sometimes seen here a small ring of skin or bone.

Fig. 16, *q*, *r*, *s* are three movable foreshafts (*igimaq*, 74) for harpoon-shafts; *s* has two line holes which is the regulation number, the others have had three, *q* being broken. The latter has been fastened in an unusual manner, as the uppermost hole on the one side and the lowermost on the other have enlargements for a knot. Otherwise the lashing (*tavssutai*, 358) which secures the *igimaq* is usually fastened lower down round the shaft (see, e. g. NANSEN's figure, p. 31). The pieces *r* and *s* have a tenon (*tuviussâ* from *tuve*, 378 a shoulder) below, which has fitted down into a hollow in the end mounting of hard bone on the shaft of the harpoon (*qârqa*, 135). If one has a piece of bone for *igimaq*, which is big enough, it is preferable to make a hollow in the foot-piece of the *igimaq*, pierce the *qâteq*, and drive in a bone tenon which then fits the hollow.

With a thrusting harpoon, of whatever kind it may be, a movable foreshaft is naturally not used, as the seal, after the harpoon has struck, is immediately released from the shaft, and then hangs only on the line. The contrary has been wrongly maintained by STEENSBY (Eskimokulturen, p. 200). Cf. same author, "Polar Eskimos," p. 355.

q. Hunde Eiland, whale's bone; *r*, *s*. Disco Fjord, Narwhal ivory. The latter material is preferred by all for *igimaq*.

Fig. 17 shows various small objects belonging to the implements of the kayak. *a*—*c* are three swivels for lines (*qivssarut*, 149), all of extremely careful workmanship. On all three the revolving bone piece has been forced into its position when the bone had been heated in boiling water; so it cannot fall off. *a* is a rather large, not particularly

old and slightly ornamented swivel. (Cf. MASON's figure, p. 206 from Cumberland Sound). There are two holes for making the line fast, principally by sewing with sinew-thread. *b* also has had two holes, but the stem is broken. In spite of its diminutiveness care has been taken that there shall be ample bone round the uppermost hole. Fig. 17, *c* is of a somewhat different type. The uppermost piece has been repaired with a lashing, and the lowermost is pointed and has been inserted in the split line before the sewing. All of ivory.

a and *b*, Hunde Eiland; *c* Disco Fjord.

Figure 17, *d* is a *sîguíkut*, 321, a small bone button placed on the front of the kayak-hunter's waterproof frock, at its lower edge. A

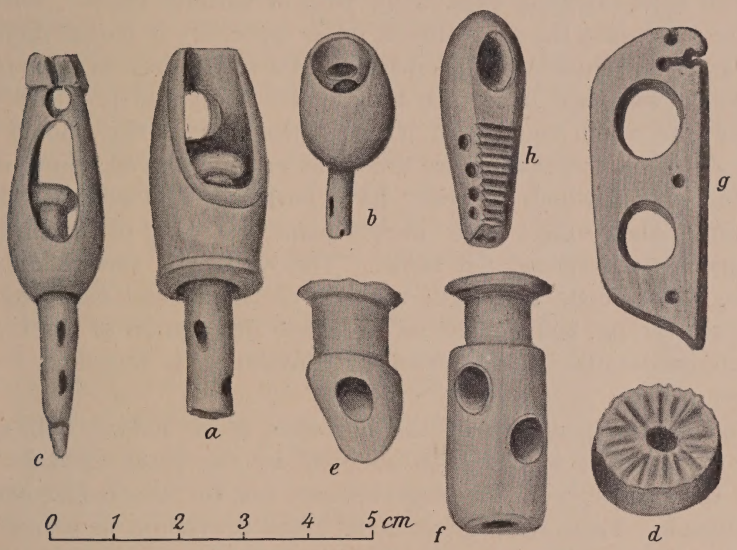

Fig. 17. Various small objects belonging to the implements of the kayak. For further particulars see text.

drawstring inclosed in a fold, runs round the lower edge of the frock, and merges with both ends through the single hole, or with one end through each of the two holes of the *sîguíkut*. By tightening or loosening the drawstring the width of the lower edge of the frock can be so regulated that the edge is just able to slip over the hoop of the man-hole of the kayak. It has been cleft off by boring.

Fig. 17, *e* is a broken and *f* a complete mouth piece (*puerfik*, 298) for a towing bladder (for description see below). The line was led in through the end hole and made fast with a knot which was held by the centre hole. The bladder was inflated through the upper hole and this was then closed with a wooden plug which had been previously placed in the mouth and then inserted with the teeth. The bladder was lashed fast round the narrow end.

Fig. 17, *g* and *h* are a couple of forms for eyelets (*savigfik* from

savigpâ, 317) on the line. They are sewn fast with sinew thread through the small holes. They serve for buttoning onto a peg on the harpoon shaft when the harpoon has to be set in order before the throw. *g* has two holes, in order, here, to permit an adjustment in the event of the line gradually stretching.

IV. Darts.

A. The Bird-dart (*nugfit*, 256). The West Greenland bird-dart as used to this day in South Greenland consists of a light shaft which is provided at the fore end with a long, thin point of iron — in old days it was of bone (*sâguâ* or *sûgâ*, 340), with or without barbs. This point is either stuck into the shaft direct, or — especially in earlier days when iron was more valuable — first inserted in a small piece of bone (*torrutâ*, 374) which was then fixed into the wooden shaft and provided with a piece of line which could hold it up to the shaft if this should break. Lower down on the shaft there are three or four curved points of bone (*âq*, plur. *ai*, 12) which generally have barbs on that edge which faces the shaft. Their object is to catch a bone or a wing of the bird if the main point itself should not strike. The weapon is thrown only from kayaks, at seafowl, and with the aid of the special throwing stick. FABRICIUS (II, pp. 242 *sqq*) has an excellent description of the bird-dart with all its details; and an excellent illustration is found in NANSEN, amongst others.

This is the principle of the bird-dart of all Eskimo tribes, and, in the same form, it has been adopted by the coast Chukchi. Evidently there is no room for improvement, nor for new constructions in the principle. There will, however, be small deviations as access is had to new material, until the entire implement gives way before the more effective weapon supplied by civilization, as is the case here in the northern part of the West coast, where the bird-dart has everywhere vanished before the shot-gun. There may also be small deviations in the execution of the original details; the lateral branches may be secured with two lashings, or their lower ends may be mortised into the wood, when one lashing is enough; or they may be mortised in addition to being secured with two lashings. SCHULTZ LORENZEN, in a treatise which seeks to establish the relationship of the East Greenlanders with the most southern tribes on the west coast, has also brought to light certain features in the construction of their implements; amongst others that the lateral branches of the bird-dart on the east and south coasts are mortised and have only one lashing, while further up on the west coast they have two, and also, that at the first mentioned place they form a more acute angle with the shaft. It appears to me doubtful, however, that anything whatsoever can be deduced from such a detail. Even FABRICIUS diffusely describes the mortising of the

basal-piece. On the accompanying figure (Fig. 18, from Disco Fjord), is also seen a heel to the mortise, and the angle here is just as acute as on the east coast — 20 degrees at the most. A mortise is also found on the bird-darts of the Chukchi (see e. g. figure in NORDENSKIÖLD: Vega's Färd, etc., II, p. 109). The object of the upper lashing was not to hold the branches to the shaft, but to secure their mutual positions, which can very well be attained by mortising alone, if only the materials are adapted thereto.

Figure 18, *a* shows a lateral branch; *b* a terminal point of bone for a bird-dart, *c* a basal-piece for dart-iron in a bird-dart or bladder-dart. All of antler. Disco Fjord.

B. The Bladder-dart (*agdligaq*, 18; the word means simply "provided with barbs").

As will be seen from the above it is not exactly the bladder which in the Eskimo conception is the characteristic feature of the implement. The main thing is that it shall be a missile for the hunting of marine mammals, where the prey is secured to the implement which is such that it resists the animal's efforts to swim or dive away. The marine mammals which are pursued with darts are various kinds of small seals besides, in Alaska, sea-otters, and as certain habits are peculiar to every kind of seal and to every stage in the development of seals of similar kind, we already have herein ample scope for multiplicity of form. The greatest variety of forms and the highest development of these darts is found with the West Eskimo, and this is not so strange, as here occurs an abundant and multifarious fauna as well as a freer choice in, and easier access to, adaptable materials.

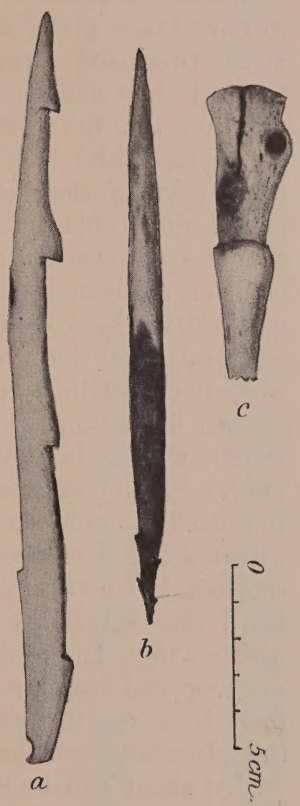

Fig. 18. *a*, Lateral branch; *b*, terminal point of bird-dart; *c*, a *torrutâ* for dart with iron point.

In conformity with the nature of the various animals there are two things in particular which vary, viz., first, that part of the instrument which serves to hold the animal fast, and second, that part which offers resistance to the animal's efforts to escape.

These diversities, however, will be discussed in a later section; here, only the bladder-dart in its West Greenland forms shall be mentioned. Of this instrument, also, we find in FABRICIUS a full description, and the details which he mentions will be found sufficiently well illustrated in his figures; but, as usual, these are very unsuccessful in

their relative scale proportions, so that they give only a false representation of how the weapon looked. CRANZ's illustration, (Tab. V) is a good deal better, and from more recent times we have illustrations in NANSEN, p. 29 and NORDENSKIÖLD, p. 480. The last two illustrations are of specimens from South Greenland where the bladder-dart is still in use; reciprocally they agree well with each other, but seem to differ in the form and placing of the bladder from the description of FABRICIUS. As his also originates from South Greenland a slight development seems to have taken place in this respect; but as I have not before me the South Greenland form or illustrations of details from more recent times, I shall not enter further into this matter.

Here, on the northern part of the coast, the instrument is no longer used, and only very old people from certain remote-lying districts have in their childhood and youth used the bladder-dart, before a rifle could be afforded and before they could be trusted to handle a harpoon and large buoy. An old hunter, here on Disco, has made me a full-sized model, and, therefore, an instrument which, though it has never been used for hunting, yet might so be used, and which represents that form which the bladder-dart had here at the time when it ceased to be employed.

An illustration of this model (Fig. 27, *g*) will be found in a later section, with scale attached, also some details on a rather larger scale. The shaft is of fir, very light, and tapering backwards while the rear-end itself is somewhat thickened. Here is inserted a piece of bone with a slight depression (*qaquisâ*, 123). The fore end is secured from splitting by sinew-thread lashing, here a hole with rounded edges is bored into which the basal-piece (*torrutâ*, 374) of the iron point fits with a tang. The iron point (*sûgâ* or *sâguâ*, 340) has been bought in the shop and matches that of the bird-dart. In the side of the *torrutaq* there is an eye though which passes a line (*isugdlua*, 111) connecting this piece with the shaft.

At about half its length the shaft is pierced by the line which afterwards passes through the one end of the curving bone tube (*suvdluligssâ*, from *suvdlulik*, provided with a tube, 347) and down again through the shaft where it ends in a knot. The bladder (*nakerutâ*, 222) is made from the gullet of a large bird: a cormorant or a gull; and sometimes of a seal. It is elongated, slightly curved and points backwards, and is so fixed that it forms part of a very steep spiral. The loose end is held in to the shaft by a thin ring of split quills (*tavsiâ*, 361); whalebone, also, is sometimes used for this. This ring goes through a fissure in the outer edge of the shaft.

The throwing stick is the same as that of the bird-dart; on the whole, it will be seen that many of the details together with their designations are identical as regards these two darts.

When the bladder-dart is to be used, the *torrutaq* is placed in the

shaft-hole, and is turned round until the line offers resistance, after which, this is still further tightened by being fastened round a bone peg. When the dart has struck, the point is immediately loosened and the line unwound, whereupon the shaft and bladder offer resistance to the seal's attempt to dive. The bladder assists the steering ability of the dart when this is thrown, and imparts to the weapon a rotary movement about its longitudinal axis; whence its name *nakerutâ* "its means for straight steering."

The bladder-dart is used in South Greenland for small seals only and especially for a kind of "battue" (*malerssorneq*, 198) by several hunters together of young *Phoca groenlandica*, and also for *Phoca vitulina* which latter being extremely shy can only with difficulty be approached so closely as to be harpooned. To attach the weapon to a large seal is considered senseless, as either it will break, or the seal will go off with it.

Before the manufactured iron darts were accessible bone points were used, sometimes with inserted blades of iron. Of the articles found two types, which must have been common at Disco Bay, may be distinguished. The one type comprises heavy bone points of antler, 30—40 cm. long and 15—18 mm. thick (see Fig. 19; Fig. 27, *h*, 1; and SWENANDER's Tab. 4). Fig. 19, A from Ujarassugssuk at the Vaigat terminates below in a swollen knob and slightly above are three line holes connected by a deep furrow. The upper end is square and has four barbs which, evidently have been too small, for which reason a slanting hole has been bored in one of them, and here a bone tooth, which has since fallen out, has been inserted. It has had an iron blade. The other, B, from Hunde Eiland is longer and more slender, but also more disintegrated; here a little of the blade is still preserved, it seems to be of telluric iron (from Uivfak?).

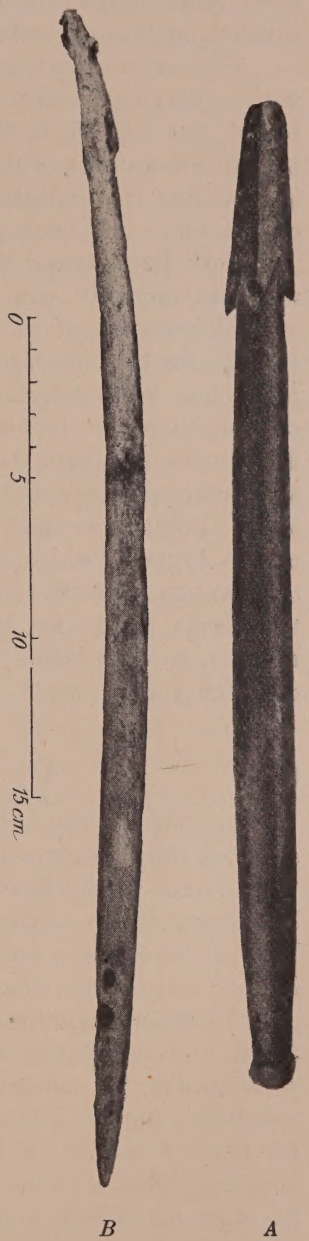

Fig. 19. Two heavy bone points for bladder-darts.

Particularly as regards the barbs there has been a rich variation of forms, of which SWENANDER's excellent illustrations afford good

information. There have been forms with square points, with two whorls each consisting of four barbs (see Fig. 27, *h*, 1); others have had 3—5 large barbs down along the sides, either all on one side, or divided on two opposite sides. Some have been of bone entirely.

The second type is much smaller, formed of flat pieces of antler, with a varying number of serial barbs; sometimes, also with an iron blade, (see Fig. 27, *h*, 2). Fine illustrations of them are to be found also in SWENANDER (Tab. 3, Nos. 119—127). They often resemble heavy arrowpoints from which, however, they can be distinguished by having one or more line holes just above the lowest point.

Both these types of points are certainly very old. Hitherto I have not met anybody who could tell me anything else about those illustrated here nor of those figured by SWENANDER but that they were *sâguaq*'s for bladder-darts. Whether this difference in the form of the point has been determined by difference in application or purpose cannot, therefore, be shown at present. For such heavy points as the first mentioned type the other parts, shaft, bladder, etc., must also have corresponded, and they may possibly have been used for larger seals. Perhaps we find the explanation of the difference in the size of the types — which otherwise are connected by easy transitions, as SWENANDER's illustrations show — in FABRICIUS's simple statement that large points for the bladder-dart are made for big and strong hunters, smaller points are made for less strong hunters, and very small ones for young people.

V. Bows and Arrows.

The bow is the common property of all mankind and is found amongst the aborigines of all climates. The object, use and primitive form of the bow is so well known that we need not discuss it, but here it is the solution of our fourth question, how has the quality of the materials and the implements influenced the form? which gives the most interesting result.

All other uncivilized people live close to, or within, the limit of trees, and no matter of what sort or size the trees may be, they will always be capable of supplying a material adequate to the relatively simple demands made by a bow. But the Eskimo has his home north of the limit of trees and his own country provides no timber. What he must have for use the ocean must carry to him, or he must make long and costly business journeys to fetch it from hostile tribes. The drift-wood from the ocean is most often found only in small pieces, or in stems so cracked that they are fissured through their entire length; it often originates from the most northern outposts of the forest and is often distorted and always of coniferous wood. It has lain in the ocean for a long time, and in addition is required for

numerous other purposes. From his own hunting the Eskimo furnishes whalebone, which in many respects is a capital material, being elastic and tough while it does not absorb water and is not brittle when cold, but is, on the other hand, too pliable. Even when several layers are put together sufficient rigidity cannot be obtained to allow of an arrow for big game attaining such speed that it kills. Nor can bone and ivory, the Eskimo's most important material render substance for a bow fit for use; they are sufficiently rigid, but not sufficiently elastic, and only in the shape of the jaws or ribs of whales might pieces be found which were sufficiently large and straight; but even if holes by the hundred had been bored here a piece for a bow could hardly be split out without its breaking.

Forced by this deficiency of material the Eskimo then makes an invention which, in its genial simplicity, seems to me fully worthy of being placed on a level with the greatest inventions of our time. As he cannot get sufficient elasticity in the bow-stave itself he entirely removes from the bow-stave the element which produces elasticity. He makes his bow-stave of a suitable length by patching it together with bits of such materials as he has at hand: wood, whalebone, bone; and this bow-stave, which need not have any elasticity at all, is backed with a series of strings of braided sinew-thread, or, failing this, thin, selected lines of rawhide. These strings are fastened to the bow-stave by lashings. The sinew-thread and the rawhide line have more than enough of elasticity and toughness, but no rigidity whatsoever; the bow-stave has now to furnish this, while the main task — elasticity — is transferred to the backing. In this construction, the Eskimo bow differs fundamentally from all other bows. In its principle it somewhat reminds one of the common hand-saw used by carpenters.

Complete Eskimo bows are not often to be met with in collections. It is the first instrument to be superseded by the rifle; and it is only in the most remote districts of Arctic America that Eskimo who still use bows may, perhaps, still be found. Complete bow-staves, or pieces of these, are found often enough in ruins and graves, but the sinew backing has rottened or been eaten away by animals. Here, round Disco Bay, the hunting of Caribou has also played an important rôle, and even on the island itself, where to-day no deer is to be found, one often comes across implements for the hunting of Caribou; shooting screens, also, and land-marks to point the way.

From north-west Disco, in 1902, I brought home a couple of bow-staves without sinew backings, they have been delivered to the National Museum in Copenhagen, and now I can only mention them according to memory and scarce notes. Since then I have not succeeded in finding complete bow-staves, only pieces of these and fragments of arrows. Fabricius had before him a complete bow with its appurtenances, and has given an exhaustive description and a bad illustration of this, but

with American authors we find descriptions and good figures of bows from the tribes dwelling there, which in all essential details are similar to those of West Greenland.

The bow-stave is made in one piece only in rare cases, although round Disco Bay drift-wood has often been found which was sufficiently long and straight for this purpose. It is generally patched together with, at least, three pieces, one middle-piece, and two end-pieces; frequently with five pieces, when the end-pieces are lengthened further with a piece of good wood or bone for the fastening of string and backing. Sometimes the middle-piece is strengthened with a splint of bone, wood or whalebone. The manner in which the centre- and end-pieces are mortised together (see Fig. 20) without rivets shows plainly that the object of the the bow-stave is only to give rigidity. The bows were from 1.0—1.3 metres long and the wood at the back 3—4 cm. broad, and a fraction thinner.

The bow when ready for use is called *pisigse* or *pisigseq*, 296, the bow-stave alone *sáneriâ*, (Supplement, 42) or *pisigsitâ*, 296. The end-

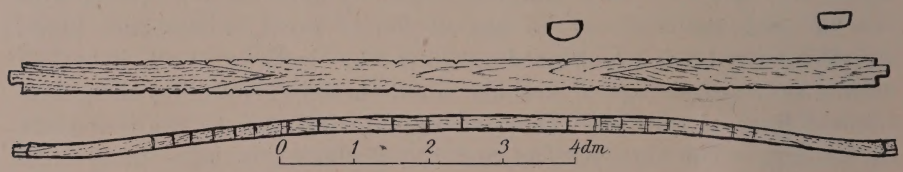

Fig. 20. Bow-stave made of three pieces of drift-wood. Seen from the edge, and from the back, and in transverse section.

piece with the notch for reception of the string, *inûssâ*, 102, "its doll" or "its man-likeness;" the central projecting part of the end-piece to which the backing and string are fastened, *noqartarfia* from *noqarpâ*, 254, "its place for stretching."

The backing, (*kujâ*, 189) is first formed like a long cord which is wound round both the *noqartarfik* pieces, so that all the strands get to lie on the back of the bow. The number of strands varies from 12—20 or perhaps more. In order to keep all the strands on the back, the bow-stave is in some places lashed with sinew-thread, whereby care is at the same time taken to join the pieces of wood from which it is made. In order to prevent the lashing from slipping there are small notches in the edge of the bow, and, besides, the lashing cord often makes a turn between the strands of the backing. The lashing is called *qilernera*, 143. Finally the whole, the backing and the lashing, is wound round with yet another cord, *nerma*, 249, which is laid in ordinary whipping.

The bow-string (*noqartâ*, 254) also consists of cord which is braided first and afterwards wound round with sinews. It has loops to fasten round the end tenons when the bow has to be used. When by wear or through moisture the backing becomes too slack, a small implement

of bone is inserted between the two parts which are formed by the strands, and these are now twisted round each other until sufficient elasticity

Fig. 21. *a*, *b*, Two pieces of an old bow; *c*, a wooden arrow-shaft; *d*—*l*, various bone points for arrows. For further particulars see text.

is obtained. In order to prevent the strands from untwisting, the centre, where the twister has acted, is buttoned to a small bone peg in the bow-stave, or the tension is made secure with a new lashing.

Fig. 21, *a* and *b* are a couple of pieces belonging to a bow-stave from a grave at Disco Fjord; they have been gathered at the junction with three bone nails of which one still remains. Round the notch which should connect them with the centre piece there are holes with countersunk grooves for the sewing with sinew-thread. The piece is overgrown with fruit-bearing crustaceous lichens and is very old.

The arrows of these bows (*qarssoq*, 134) were about one metre long. They consisted of a very light wooden shaft of *unarsivik* (*Picea* sp.) and a bone point, (*narqua*, 237) sometimes with an inserted blade, (*ulua*). Above, the shaft was provided with a socket for the bone-point, *narqulerfia* "its place for applying the point," below, with a notch (*eqia*, 66) for the string, both ends being secured against splitting with a lashing of sinew thread, (*nerma*, 249). In addition the lower end was provided with two feathers, (*sulue*, 345) of raven, or on the smaller arrows, of ptarmigan. The tip and half of the vane were cut off so that the feather rib came near the shaft, to which it was fastened with two lashings.

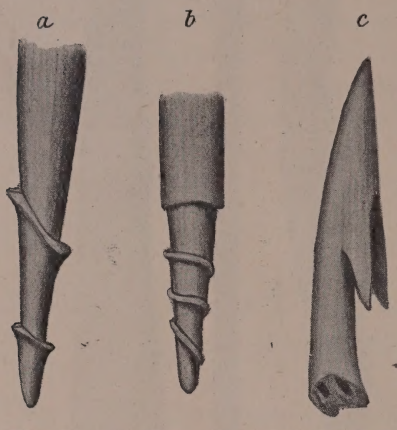

Fig. 22. *a, b,* Two examples of spiral ridges or slanting knobs on the hinder end of the bone point of arrows; *c*, the extreme portion of a *pangaligtoq* with double barbs.

The form of the bone points varied greatly, they were ordinarily blunt for ptarmigan, but otherwise were double-edged, cutting, with or without barbs or points and with several barbs in unilateral succession, the one above the other. Some good illustrations are to be found in NORDENSKIÖLD's "Den andra Dicksonska expedition till Grönland," p. 481.

C. RYDER has already pointed out (loc. cit. p. 310) that bone arrow-points from Scoresby Sound in East Greenland were fixed in their wooden shafts by means of tangs having small slanting knobs and that the knobs form part of the thread of a lefthanded screw. The same author has also stated that such attempts at screws are frequently found on West-Greenland arrowpoints, in some cases with a complete thread of a screw in high-relief, and has given an explanation of the method of the manufacture of these screws.

Other examples are mentioned by W. THALBITZER (loc. cit. p. 365).

Around Disco Bay arrowpoints with screw-bearing tenons are very common and I may add that I have seen similar specimens in the hands of other collectors from the districts of Egedesminde, Holstenborg and Godthaab (see Fig. 22).

This seems a very interesting fact as it has sometimes been said

that primitive man only knew two ways of uniting rigid objects in protraction of each other, viz. by securing the bevelled ends of the objects either by nails or by lashings.[1]

Fig. 21, *c* is an arrow-shaft found on the top of a mountain in the interior of North Disco; *d*—*e* are various bone points, all of antler and greatly warped from having lain in the ground. All are very carefully constructed and have, for instance, been very smooth with keen edges and sharp points.

Fig. 21, *d*—*g*, Hunde Eiland.
— *h* , Kronprinsens Eiland.
— *i* , Ujarassugssuk.
— *k* , Disco Fjord.

Figure 23 shows an arrow-point which by its smallness differs from all with which I am familiar both from literature and life. It is of ivory with an inserted iron-blade. It has been most carefully constructed, too carefully for the possibility of its being a toy. It is said to have been used for the shooting of ptarmigan on the snow. (Disco Fjord).

Fig. 23. An uncommonly small, well-made arrowpoint for ptarmigan shooting on the snow.

I have procured a new specimen of the peculiar arrow-point for shooting Caribou, which is termed *pangaligtoq* (from *pangaligpoq*, 272), and the use of which I have previously described (Arb. f. d. Danske Arktiske Station, No. 5). It is only the point itself, and, like the former point, of ivory, but differs in that the downward pointed barbs are double (see Fig. 22, *c*). Its "automatic" penetration must have been still more effectively insured.

VI. Lances.

The object of the lance is to give the mortal wound to the animal previously harpooned, or shot with the rifle. Moreover it is this weapon, and not the harpoon, as some authors write, which is employed when attacking non-diving animals like Caribou or Polar bears in the water from a kayak or boat. For the hunting of seals from the ice, on the contrary, the lance is not used; it is superfluous, as here man is far superior to the seal and can kill it with anything at hand, and without possessing any special implement for the purpose.

In West Greenland two forms of lances are known.

[1] A fuller account of the subject will appear elsewhere.

The large kayak-lance, (*anguvigaq*, 37) is well known. It is fully described in FABRICIUS and well illustrated in NANSEN. It consists of a rather heavy shaft which is capped with a piece of bone cut transversely with a smooth level surface (*qârqa*, 135) in the centre of which is a knob.[1] Then comes a somewhat long rod of strong bone (*ipuligâ*, 108) slightly concave below, often formed by the riveting together of two pieces of antler. At its upper end it carries the fast riveted blade (*ulua*, 392) and below it has a socket for the reception of the knob; it is fixed to the shaft by two straps (*tavssutai*, 358) of rawhide line, so that it may be bent to one side or the other without breaking: a construction quite similar to that which connects the shaft of the kayak-harpoon with its loose foreshaft, *igimaq*. The lance may be so made that it can be thrown by hand, in which case some bone handrests (*tikâgutâ*, 364) are inserted, or it may have pegs to enable it to fit onto the throwing stick of the harpoon shaft. There may be some slight variation in the length of the straps and of the shaft. If it has to be thrown with a throwing stick, that is to say from a long distance at large and dangerous game, the shaft is longer and more slender than when only the shooting of small seals is anticipated, when it is safe to approach the animal and throw by hand.

In other respects there is no room for variations. The object and the use are identical and the implement is finished. It is also used in essentially the same form on the coasts of both East and West Greenland, and by those of the Central Eskimo among whom the culture of the kayak is on about the same level as in Greenland. Owing to lack of literature I am unable to give any information as regards the appearance of the Alaskan lance.

Moreover, a short, slender lance (*kapût*, from *kapivâ*, 169) which consisted only of a long knife-blade immovably fixed onto a wooden shaft was always used formerly and is still used at times. It is employed to give the animal its death-stroke when one comes so close to the animal that the long throwing lance becomes unmanageable, as is implied by its Greenland name "something to stab with." Since the introduction of the rifle it has in some measure disappeared, or, to be more correct, has become shorter and been converted into a long-handled knife which is stuck into a sheath on the deck of the kayak. If the bullet does not entirely finish off the animal, the small lance is finally used, and particularly to give the cuts necessary for the attachment of the various towing tackle, for which reason it is also called *sanarfit*, 312, "that to fashion it with."

Yet another term for a lance may be found, *qalugiaq*, 128. From KLEINSCHMIDT'S manner of specifying it in his dictionary it looks as if he considers the word as an original one, and not as derived from

[1] Sometimes, the *qàteq* has a socket in the centre and the *ipuligaq* ends in a tenon fitting into it.

any other root. The word is now only used to denote the European large whale-lance of iron on a short shaft. But possibly it is the term for the old Eskimo whale-lance which has been transferred to this object.[1]

One form of lance still exists, however, which strangely enough seems to be quite unknown, since, so far as information goes, it has never been mentioned by those authors who have dealt with the material culture of the West Greenlanders. Yet in certain districts it is generally distributed, and in other districts, where it is not used because there is no reason to do so, it is known to everyone. In accordance with its purpose it might be termed the West Greenland reserve-lance.

Here, the implement is called *savgútartoq*, or *qajaqatâ*. The word *savgútartoq* is perhaps just comprehensible for European train of thought, but hardly capable of being translated exactly. According to the Rev. H. Mortensen the derivation is as follows:—

savik, 316, iron, knife.

savigpâ, 317, "he puts on something sharp", for instance, "he sets the harpoon on the shaft in order to have it ready for the throw."

The word comprises, moreover, the suffixes *-ut*, 458," the means wherewith" or *-upâ*, 457, which indicates, among other things, that the action expressed in the main word is for the benefit of some part otherwise unconcerned; and also *-tarpoq*, 450 "what is usual," "what frequently," "what sometimes."

Thus the word becomes an intransitive noun-participle of a verb *savgútarpâ*, and may perhaps be freely rendered by "that thing which sometimes by being set upon another thing makes this sharp."

Words of kindred origin which are not to be found in Kleinschmidt's dictionary either, are for instance *savgutaq*, that piece of the harpoon line, which reaches from the harpoon and down to the eyelet of bone, and which is buttoned to a peg on the harpoon-shaft; *savgútarfik* "the place where one puts on something sharp," that is before going out to the open sea, the name of a small island in Disco Bay.

The word *qajaqat* is derived from *qajaq*, a kayak, and the suffix *-qat*, *qatâ*, 424, "his with —," "his in the company of" and Mr. G. Kleist thinks that it is meant to express that the implement shall be a necessary safeguard for each individual man to carry when he goes out singly on dangerous hunting in contradistinction to when several go together. A free rendering of the word is "the thing which he usually has with him when in the kayak."

The reserve-lance (Fig. 24) consists of an ellipsoidal piece of hard and strong bone, preferably ivory, into which an ordinary steel lance blade is fixed with an iron nail. Behind it is well rounded and has a hollowing; at the side of this, two line holes have been bored up through the under edge and out through the side, where they are widened so as to receive the knot of a line which is not too thick, so that this

[1] Fabricius, also, (Zool. Bidrag, p. 77) is in doubt whether the word is original or is a new formation. Perhaps it is derived from *qaluvâ*, 126, "he bales it out," "he bales the fluid matter out from it," for instance, from a boat or a tub, and thus is only a translation of the Danish (Dutch?) term for the lance — "Lænser", a baler — generally used in Greenland.

cannot protrude and impede the entrance. The weapon is adjusted for being fixed onto the movable foreshaft of the harpoon shaft, and the two short line-ends are then made fast to the *igimaq* down in the lashings (see Fig. 24). This lance is used mainly by hunters who hunt the hooded seal (*Cystophora cristata.*) The hooded seal is a large and strong animal which at once becomes aggressive in the open sea when wounded. Naturally, after having harpooned it, one tries to shoot it or stab it with the large lance; but the furious animal bites the implements to pieces, and should it happen that it succeeds in breaking the lance, or, as may also happen, that the point of the lance gets fixed in a bone, the kayak hunter may incur great danger. He now fixes the *savgútartoq* to his harpoon shaft and has almost as effective a lance.

The reserve-lance shown in Fig. 25, *A* is from Kronprinsen Eiland where every hunter has one in his kayak.

It is strange that FABRICIUS, who lived in districts where the hooded seal was hunted, does not know this implement. From his book "Om

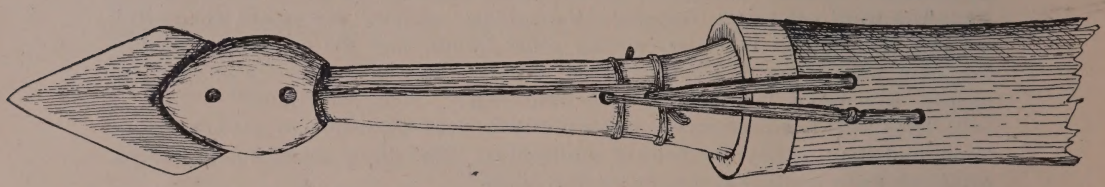

Fig. 24. A *savgútartog* (reserve lance-head) set on the *igimaq* of a harpoon shaft.

de grønlandske Sæle" it appears that he knew the hunting of the seal on drift-ice best. This method is preferred in South Greenland because it involves least danger, as out in open water, the seal breaks all implements to pieces. In the Table in his paper on the hunting of seals a figure (4. g.) is to be found which FABRICIUS describes as a thrusting harpoon for hunting on ice. It seems somewhat strange to him that this "small harpoon" has no barbs at all, but as he does not know hunting on ice from personal experience, he thinks that perhaps they are unnecessary; as here the seal has but little time to act in self-defence. Probably, therefore, FABRICIUS has seen such a lance, but has not had its purpose explained to him, because, as a harpoon, it is quite impossible; it is constructed specially for the object in view — namely to allow of its being easily withdrawn.

The reserve lance or as American authors call it "the loose lance-head" is a well-known weapon among the Central Eskimo. From Cumberland Sound KUMLIEN has brought home some specimens, his book, however, gives no information about their use, beyond that which lies in the name. Some of KUMLIEN's specimens are excellently reproduced in MASON, who in his monograph on the harpoons treats them together with a number of other not relevant implements. Nevertheless he every-

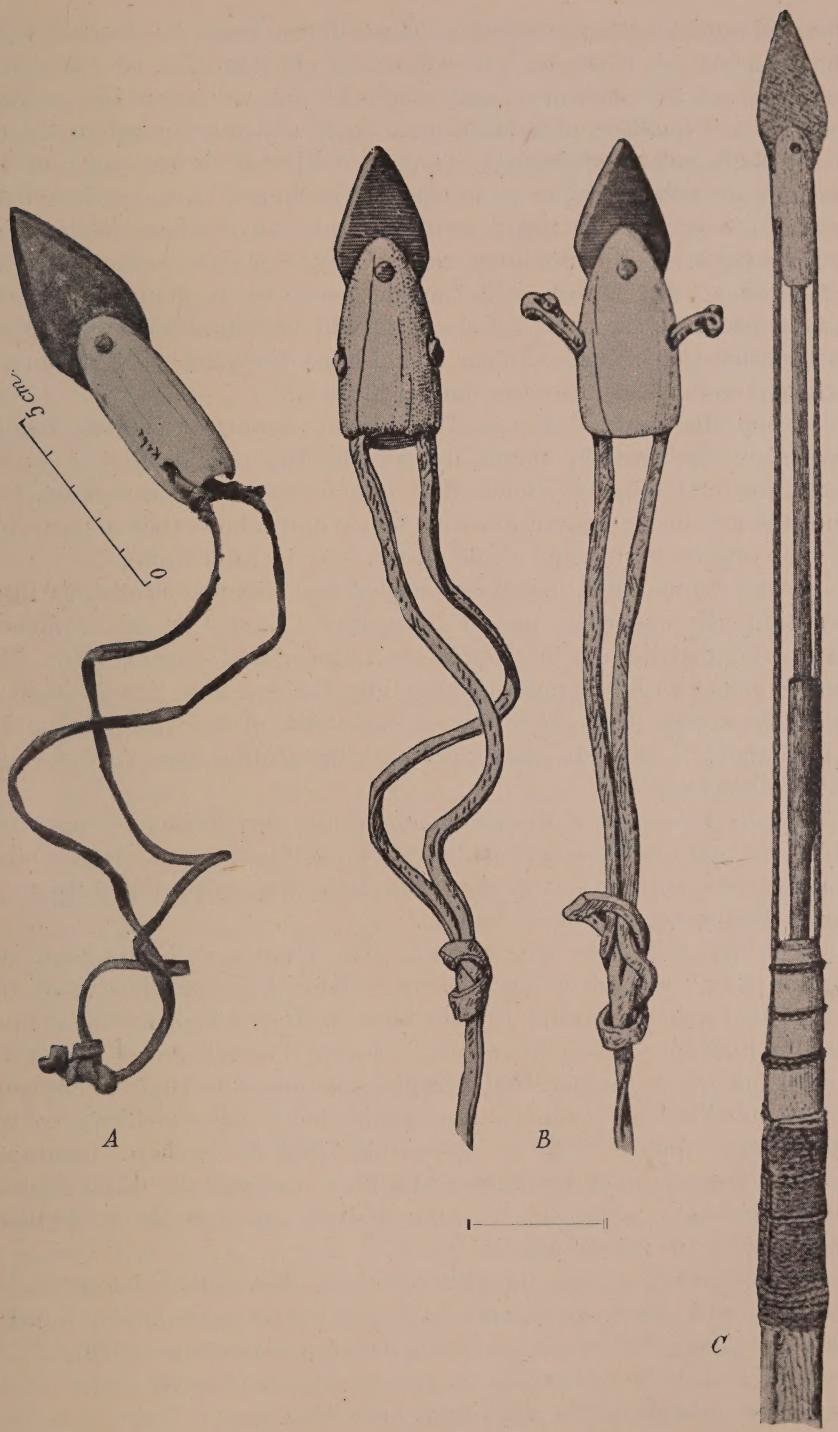

Fig. 25. *A*, *savgútartoq* from Kronprinsen Eiland, Disco Bay. *B*, two loose lance heads from Cumberland Sound collected by KUMLIEN (After O. T. MASON) (The scale is 1 inch.). *C*, a caribou-lance from Aivilik, Central Eskimo; length of fore-shaft and point 35 cm. (After F. BOAS).

where designates them correctly "loose lance heads." MASON writes about them: "A loose head of a lance is given in Fig. 53. A careful inspection of this specimen, and others like it, will show that it lacks the essential qualities of a harpoon, namely of being hinged to the end of the shaft and of retrieving. There is neither barb nor toggle on this specimen or others of the same class. The hinged lance, either in the form of a weapon to be thrust or of one to be thrown from hand or bow or throwing stick, is exceedingly rare. Only in the areas where immense sea mammals are hunted, is it thought necessary to guard in this way against breaking the shaft. Indeed, it will be found that the Eskimo on the other side of the continent do not hinge the lance head, but merely socket it and leave it in the animal stabbed."

From the above it is seen that MASON, strangely enough, has the idea that the weapon should be left in the animal, but a careful inspection of his figures shows that two pieces of line invariably issue from the specimens figured and this fact plainly shows that no such idea as that suggested by him could ever occur to an Eskimo.

SWENANDER, also, has been misled by MASON's erroneous interpretation. He describes one of KUMLIEN's figures in his comments about the distribution of harpoon forms, and says (p. 40) "The conical points with line holes opening into the rear end, figured by BOAS and MASON, seem to be distinctly characteristic of the tribes at Cumberland Sound. I have at least not been able to find these features described elsewhere."

As this is said in a discussion about the distribution of harpoons, while the author elsewhere in his work mentions lances, it is evident that he has entirely overlooked the fact that both the authors he quotes distinctly call them "lances."

The fact is that in BOAS's book "The Eskimo of Baffin Land and Hudson Bay," we find in Fig. 7 a whole lance like that illustrated, and on p. 14 he writes regarding it "The lance with detachable point is much used in hunting Caribou in ponds." From the wording of this statement I take it for granted that it is also mentioned in BOAS's chief work "The Central Eskimo," which is inaccessible to me, but which SWENANDER knows and quotes. It is interesting that it is here mentioned that the lance is used for hunting Caribou, because the ordinary large kayak lance also occurs in the same district, and has the same name, *anguvigaq*, as in Greenland.

Further west, among the tribe which is often called "Kinipetu," we also meet with the weapon, and employed for the same kind of hunting. BOAS has a figure 113 which I permit myself to reproduce here. (Fig. 25, *C*). It is true he calls it "a Caribou-harpoon with detachable point," but if there is no mistake in the drawing it must be a lance. There is no trace of barbs to be seen, and, as mentioned above, there is no advantage whatever in harpooning a Caribou in the water; it can neither swim nor

dive away from the hunter. As the lance with a fixed point on a movable foreshaft occurs here in any case in the neighbourhood, on Southampton Island for instance, it seems that the lance with the detachable point is regarded as particularly adapted to Caribou hunting.

Whether the Greenlanders brought it with them as a special weapon for hunting Caribou and discovered only when meeting with the hooded seal that it might adapt itself in their case also, or whether for Caribou hunting they on the whole preferred it to the ordinary kayak lance is very difficult to ascertain. That they hunted Caribou in lakes and at the heads of the fjords where the animals were driven out by systematic "driving" is well known, and it may happen occasionally still. It has also been mentioned before, for instance by FABRICIUS, II. p. 239, and is said to be illustrated even by EGEDE. STEENSBY, therefore, is incorrect when he states the contrary (Eskimokulturen, p. 67 and other places).

VII. Spears.

I have not much to say about the fishing spear (*kakiak* or *kakissat*, 163). Both the commonly distributed forms, the bifurcated as well as the trifurcated one, as they are figured by HOLM from the east coast for instance, are well known to the West Greenlanders but are not used here, and have hardly ever been of much importance here at Disco Bay where no doubt they have mostly been used for *Cyclopterus*. For catching trout (*Salmo alpinus*) a far more effective method was employed in bygone times, namely damming the rivers with rows of stones. Perhaps they were used sometimes in the winter for trout catching in the open holes of rivers and lakes (cf. M. P. PORSILD: Hvor opholder den grønlandske Laks sig om Vinteren? Arb. f. den Danske Arktiske Station paa Disco No. 1).

VIII. The Evolution of the Types of Missile Weapons of the Eskimo.

We have previously seen how, by adopting a purely technological point of view we get the Eskimo missile weapons grouped in a series of generic and specific types. It now remains for us to examine how these types stand in relationship to one another and how, technologically regarded, they have evolved from one another.

We begin with the bow and arrow. Taken jointly they certainly cannot be termed a simple thing, but constitute a veritable machine; but in some measure it is natural to begin here, as this weapon is common to all mankind; moreover we find among the arrows here some of the most simple forms: a stick with a stone in one end and a feather in

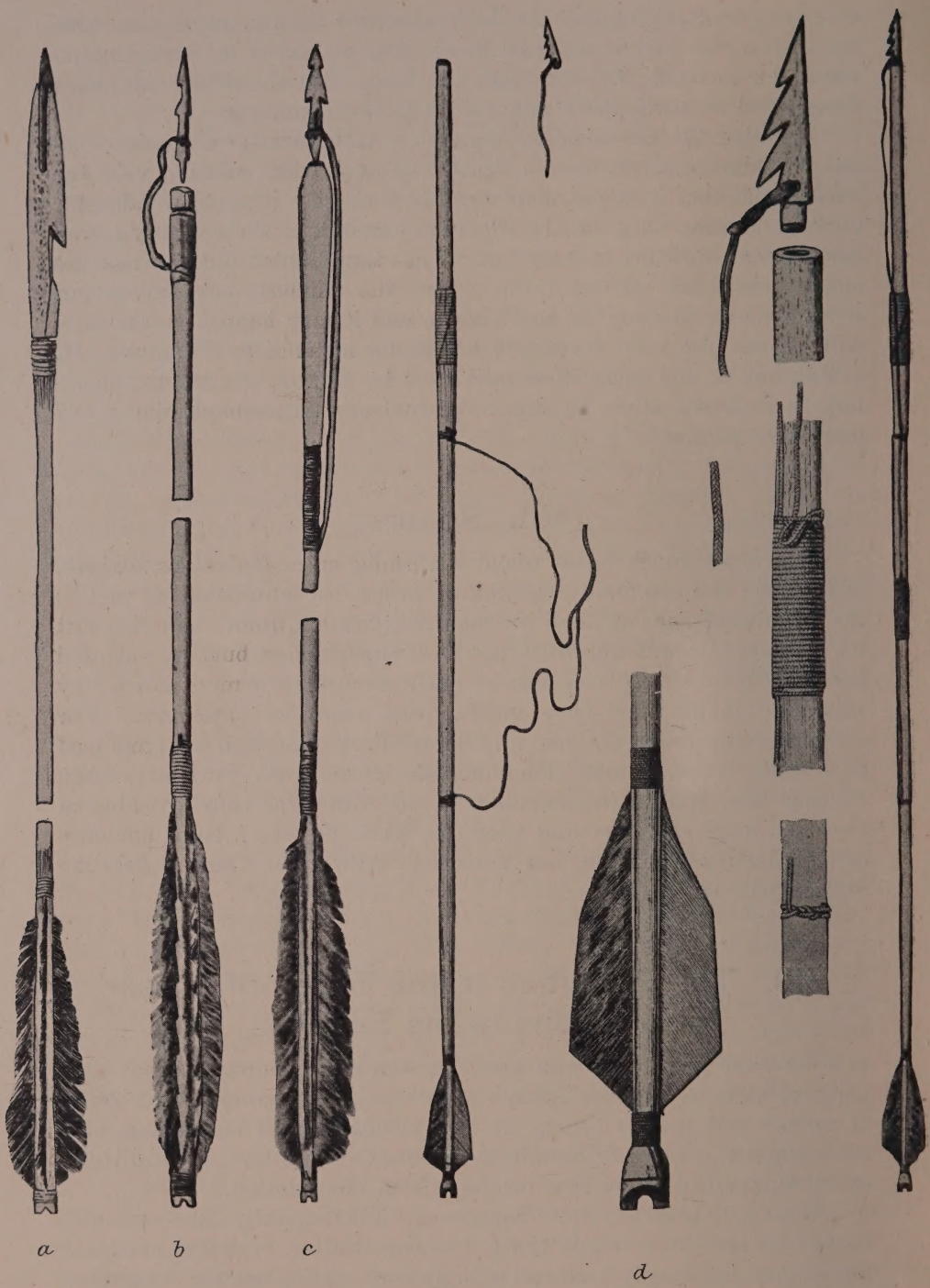

Fig. 26. To illustrate the technological development of darts from Arrows. *a*—*d*, Arrows for hunting sea-otter, Alaska (After O. T. MASON).

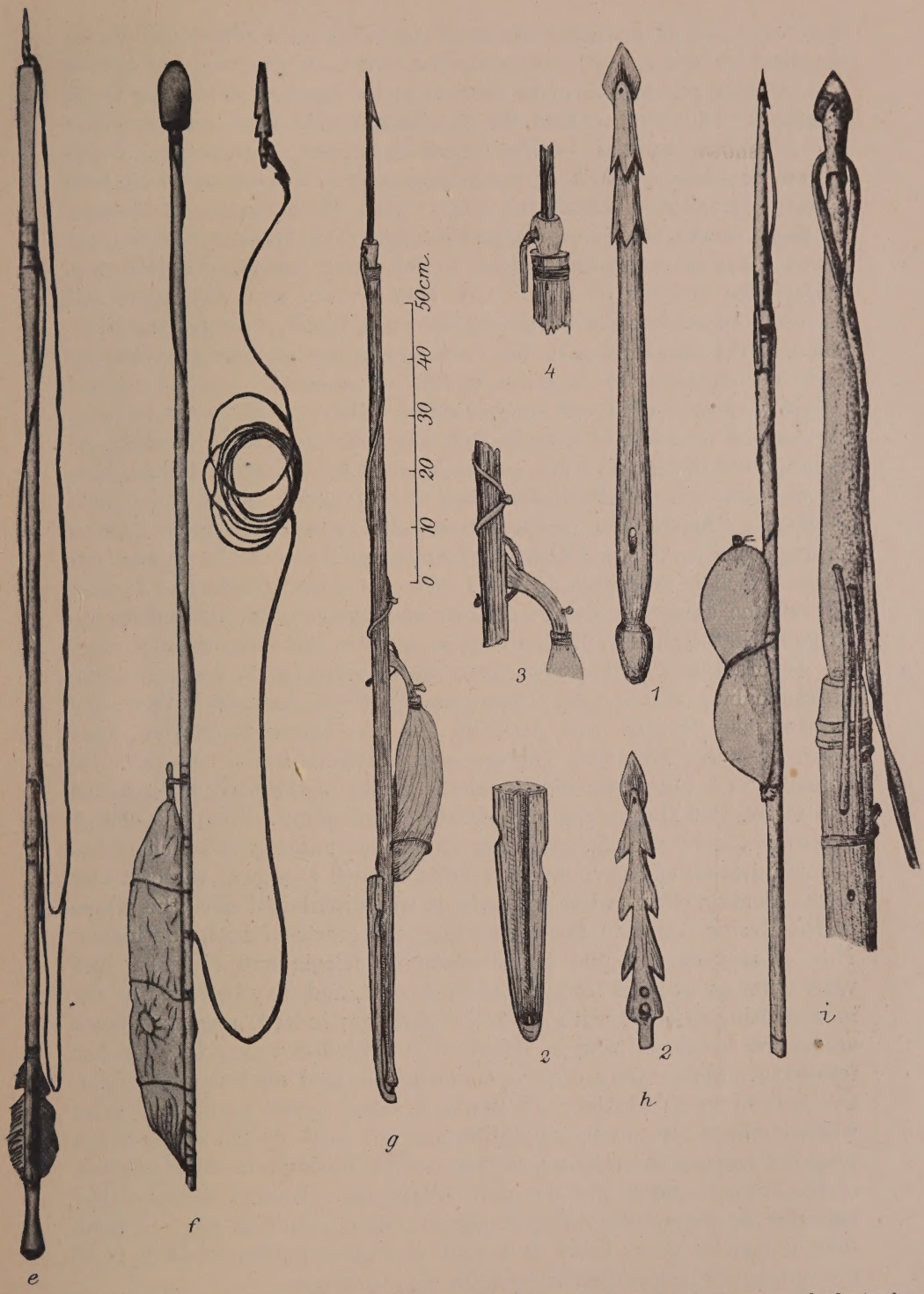

Fig. 27. To illustrate the technological development of darts from Arrows. *e*, *f*, darts for hunting sea-otter, Alaska (After O. T. Mason); *g*, light form of bladder-dart from West Greenland with details; *h*, 1 and 2 ancient forms of points of bladderdarts from West Greenland; *i*, strong and heavy bladderdart with small harpoon-like point, total length 160 cm., from Cumberland Sound (After F. Boas). For further particulars see text, pp. 173 sqq.

the other. But at the same time we find included in the Eskimo arrows for shooting on land a wealth of specialized forms, all designed with a view to the particular animal to be slain or to the method of hunting to be employed. To what extent the specialization in form and use may go, is shown by the peculiar Caribou arrows, *pangaligtoq*, which I have previously described (see bibliography). But we still lack such detailed information about the employment of the majority of these as might make the form comprehensible. The travellers who came across them in use, were content to call them "arrows," at the best "arrows for shooting on land;" now they are not used any more, and we must be satisfied with the explanation which rests on tradition. Some of the peculiarities in the form will naturally, here also, be due to local conditions: for example quality of material.

Now, however, in one single Eskimo tribe a whole series of types of weapons occurs, which technologically differ somewhat in their extreme points though all have served for hunting the same animal, viz., the sea-otter. Some illustrations are to be found in older works, such as DALL's "Alaska and its Resources," but newer and more copious figures occur in MASON "Aboriginal American Harpoons." In the literature which is accessible to me I have not been able to find further information about the details of their employment, but the figures are so good that I shall venture to try to explain this from their form.

Before this it is however necessary to refer to the main features of the habits of the prey; they are described, amongst others, by NELSON and PETROF who partially cite the oldest description, that given by VITUS BERING. The sea-otter, *Enhydra lutris*, is a powerful animal. In a full-grown individual the length of the body may exceed one metre, and the weight may rise to 40 kilograms. Now it is almost exterminated by the indiscriminate, rapacious hunting to which it has been subjected, and is confined to quite a small area near the east end of the Aleutian chain, while formerly it was distributed over the whole of the Bering Sea, and far down along the coasts of both continents. Now it is very shy and almost entirely pelagic and may be met with as far as 80 miles from the nearest coast, and may be found asleep in a drifting attitude with its belly upwards; indeed, one may come across the female drifting in this position with her young between her fore-paws. Only rarely does it come up on land on remote skerries, and only in rough weather. Otherwise it takes its rest on drifting kelp, where perhaps also, now, copulation and the birth of the young takes place. Formerly the shores were the normal resting and sleeping place of the animal, and it was not particularly shy. BERING describes the sea-otter as a very pleasant and playful animal, and so easy to hunt that he and his party lived on it while in winter quarters, and he is of the opinion that it would have been easy to tame.

To-day the animal is shot with long-range rifles from land or a

vessel, and white men take part in the work of extermination. Formerly sea-otter hunting was the principal support of the natives. They killed the animals partly with clubs on land, when they lay asleep during storms, and could be surprised because the surf deadened the sound of the hunter's steps, partly with bow and arrows which were shot at the animals when, being startled, they resorted to the sea or approached the coast in order to go ashore. The last form of native hunting, before the introduction of the rifle, was carried out with the help of darts flung from open boats, which by organized "driving" surrounded the animal.

Fig. 26, *a*—*d* and Fig. 27, *e*—*f* show six different types of original weapons for hunting sea-otter, all copied from MASON'S work, which, besides, contains others which form the intermediate forms of these.

Fig. 26, *a* is an arrow from Alaska Peninsula. It is a heavy, firmly fixed bone point with an inserted stone (or metal?) blade. The plane of the blade is at right angles to the plane through the two edges of the bone point. These cannot have been meant to cut, but only to distend, because a barb is found in one of them. Here, then, we have the same principle which has already been shown in the whale harpoon from Cumberland Sound (Fig. 13). The size and form of the point shows that the arrow must have been used at close quarters, and the intention was to wound the animal vitally or kill it outright by the shot itself. For this reason the point is not detachable and there are no contrivances to protect the shaft from the animal. MASON has several forms of this type.

Fig. 26, *b*—*c* is from the same place. Here the point is not for the purpose of killing, but is detachable, and is only intended to fix the animal to the shaft, which then offers resistance to its movements in the water. In *b* the point is fastened only into the upper end, in *c* somewhat lower down, so that the shaft lies athwart in the water. Besides, here, between shaft and point a line is inserted, which unwinds when the point has struck. Hereby the shaft is removed from the wounded animal. Figure 26, *c* is thus a more perfect type.

Fig. 26, *d* from the same place is still more complete. Here the line is bipartite and fastened to the shaft in two places, so that it is less exposed to the danger of breakage from the drag of the animal when diving. The detached figures show the smart winding and jamming of the line before the discharge.

Fig. 27, *e* is a dart from Unalaska meant to be thrown with a throwing stick, and is therefore much larger and heavier than the previous one, of which, in other respects, it is a repetition as regards principle and mode of employment. It has even, what is unusual with darts, kept the steering-feather of the arrow.

Fig. 27, *f* is a dart from Bristol Bay. It is still larger and heavier, yet meant for the same animal. It is also thrown with a

throwing stick not shown in the figure. Here the shaft is provided with a fairly large, but light, bladder, which very considerably increases the resistance of the shaft in the water. In order to give the weapon weight and balance proportionate to the bladder, which also acts as a steering apparatus, the fore end is provided with a heavy bone knob, into which the small point is pushed. The line is very long and is fastened to the shaft at the bladder. Hereby the shaft is to some extent kept out of the animal's way but it also becomes easier to get hold of it, as the length of the line becomes the radius of the circle within which the animal tosses itself about during its efforts to escape.

Here, therefore, we have in this series of weapons for hunting the same animal the easiest transitions from the arrow to the dart, and even to the dart with a bladder, which, with all Eskimo tribes having open water, plays such an important part in hunting seals. For this purpose, however, the implement has to be considerably re-modelled. The seal is bigger and stronger than the sea-otter, and is very persevering in diving. Here the development proceeds in two ways, the terminal points of which are shown in *g* and *i*.

Fig. 27, *g* is the last form of the bladder dart in West Greenland before it disappears entirely. The point is of thin iron and its object is not so much to wound the animal as to attach it firmly to the shaft. The line is only so long as to secure the safety of the shaft, because this implement is supplemented by another implement which kills: the lance. As this is also thrown from the kayak it is not necessary to get so close to the animal that one can catch hold of the line; besides it would be too risky for the hunter. Figure 27, *h*, 2 shows that formerly much smaller points of a form similar to that from Alaska were used in West Greenland.

Fig. 27, *i*, (after BOAS l. c.) shows the bladder darts of the Central Eskimo (from Cumberland Sound) which are so heavy that RINK may justly say about these forms that "their monstrous shape would amaze a Greenlander." The detachable point is here a veritable harpoon, the loosening of which, besides, is secured by the movable foreshaft, which by its weight, moreover, balances the large bladder.

Whether this form was known in Greenland in earlier times is doubtful, and can only be decided by some happy discovery, because the single points and foreshafts would scarcely be capable of being distinguished from harpoons and *igimaq*'s of harpoon shafts. That there have been far heavier bone-points with fixed, inserted blades has been previously mentioned, and is shown in Fig. 27, *h*, 1, which is drawn on the same scale as the small bone point below.

From the bladder dart figure 27, *i* the development again proceeds in two directions, the terminal points of which give entirely different weapons. With the omittance of the toggling butt of the detachable point of *i* we get the lance with detachable head of the Central Eskimo

which has previously been mentioned and illustrated (Fig. 25, *C*). Here, naturally, the bladder, which only impedes its use, is dispensed with. The other extreme characteristic is that the point is not fixed to the shaft, but, by the aid of a long line, to a float which varies in form; in the majority of cases it takes the shape of a great bladder, which with the line lies by itself on the kayak.

The Greenland kayak lance, on the other hand, which occurs also with other tribes, the Central Eskimo for instance, has the blade fixed into the foreshaft (*ipuligaq*, 108) and is in a way a further development of Fig. 27, *h*, 1 with the barbs omitted and the fastening of the shaft altered. The loose lance point has, on the contrary, here become a reserve implement, an accessory to the harpoon shaft (see Fig. 24).

Arrows shot from a bow at birds on land are generally blunt, as the shock alone is sufficient to kill or stun the game. But for shooting sea-fowl the bow is unsuitable, and the arrow is replaced by the bird-dart. For this no bladder is needed, as even the lightest shaft affords sufficient resistance to the diving ability of a bird. As the hunter is always close by in the easily movable kayak, and as in this case he incurs no danger in approaching his prey, the main object of this dart is only to hold the prey fast, and its effective radius is increased by the lateral branches.

On firm ground, from the ice, the bladder no longer has any significance, whether the animal be pursued at the edge of an opening in the ice or under it. Here it is far safer for the hunter to hold on to the line, because here he is in his own element and his superiority over the marine animal is so overwhelming that even such a colossus as the walrus can be caught by a single hunter (see e. g. the excellent figure in Parry, p. 172). Also the movable foreshaft for the thrusting harpoon is a hinderance, and the shaft can be altered for other purposes, especially as a support for the indispensable ice implement the *tôq*.

Should the prey be smaller and weaker, namely a moderately sized fish, the line may even be dispensed with. The point is made fast to the pole and the prey hauled up with this. Here we have the principle of the fish spear, the effective radius of which is increased by doubling or trebling the point. But if the fish is too large and strong, e. g. *Somniosus microcephalus* or *Hippoglossus vulgaris*, thrusting harpoons with lines must also be used.

In considering the development of these types of weapons we have had only the technological view in our minds: adaptation to purpose and use. Here no attempt will be made to explain the chronological development of the implements. It is possible that this has sometimes gone in the same direction, sometimes in the opposite, but as to this we can probably never get any reliable information. All the extreme points mentioned here are practically speaking of the same age and all have been in use at the same period, though not in the same

place, because the conditions for hunting differed. Some have now become obsolete, being supplanted by the easier and more effective fire-arms with which civilization has provided the Eskimo, and probably they will all vanish because the modern weapons also affect the stock of game and change its habits. Yet we should like to establish the fact that we have no need to borrow from foreign forms of culture in order to develop all these types and forms of weapons. If the "primeval Eskimo" had had only the idea of a bow and arrow with him when he came to the happy hunting grounds where the whole of his wonderful culture has flourished in full, then he would have had herein a basis sufficient to allow of the development of all that might be of use to him. But, the idea of a bow and arrow, which is a weapon common to all mankind, was I think, conceived in a milder zone.

IX. Other Hunting Implements.

A Sealing net of Whalebone Strings.

As is well known, doubt has prevailed as to whether the net-catching of seal and white whale could have been introduced into Greenland by Europeans, or whether it is indigenous. Formerly the view that net-catching was of European origin found most favour, but, by degrees, so many facts have become known, that the other view now seems to be best founded. The different opinions have been compared by STEENSBY (pp. 64—65). Here only those of greatest importance will be considered.

DAVIS has the peculiar statement about the West Greenlanders: "They make nets to take their fish of the finne of the whales." This statement, however, appears to have been heeded only lately, (by PARRY's quotation of it?). In 1821 PARRY found a net of whalebone at a deserted settlement in Lyon Inlet in the home of the Central Eskimo. In 1843 a sealing net of whalebone is said to have been delivered to the National Museum in Copenhagen from the district of Julianehaab, and it is likely that Inspector HOLBØLL in 1856 refers to this net when he states in his report that about 20 years ago a net of whalebone is said to have been found hanging on an iceberg in the vicinity of Julianehaab. As none of the conditions for Right Whale hunting exist here this net must originally have come from the east coast, and HOLM also relates that in tales he has heard the use of nets of whalebone mentioned. To this may then be added that FABRICIUS (II, p. 248) relates that for hunting Guillemots nets of whalebone were sometimes used.

At Point Barrow, also, the net-catching of seal is carried on on a large scale and even if it is asserted that homogeneous conditions of hunting easily originate homogeneous methods of hunting, if only the means for the accomplishment of this are present, there is one feature in the des-

cription of the methods from Point Barrow which speaks somewhat in favour of net-catching being an old invention common to the Eskimo. MURDOCH, in the section "Natural History" in RAY's Report of the International Polar Expedition to Point Barrow, Alaska, Washington, 1885, p. 96, amongst the methods employed for net-catching describes several features which the Greenlanders do not know at all; on the other hand the manner in which the net is set is mentioned: three serial holes, of which the largest is in the centre and through which the net is let down — quite as in Greenland. It is namely not absolutely necessary to do it thus, even if it must be admitted that for nets of a certain size it is the most practical way.

When the Greenlanders are asked their opinion on this question the majority here reply that "the ancients" certainly knew seal nets before the arrival of Europeans, and that the first nets were made of whalebone is a fact known to everyone. As opposed to this Mr. G. KLEIST, who is himself from Julianehaab where nets are not used, objects that if this is so, nets must also be mentioned in the old legends, which he does not remember hearing. As mentioned above it was in old-time tales that HOLM heard about nets from the east coast.

There is hardly any doubt that the use of whalebone for nets ceased immediately colonization began. It was an enormously troublesome task to split the whalebone for nets, and it did not offer the very least advantage over nets of twine; and what is of more significance, whalebone, ever since trade with Greenland began, has always been one of the articles most desired, so that the merchants would quickly see their interests advanced by supplying twine for net-making.

The same argument is not quite so applicable as regards fish lines of whalebone. Even if they were troublesome to produce and fragile in comparison with hemp lines, yet they had certain advantages which the hemp line can never attain. Whalebone does not absorb much water, does not become heavy, is easily dried and does not become rigid from frost, and its peculiar quality of elasticity makes it easier for the fisherman to "feel" a bite in deep water with a line of whalebone than with one of hemp. But none of these advantages is of any consequence with a seal net.

From the foregoing remarks it will be seen that it is exceedingly interesting that a couple of years ago an old seal net of whalebone was found in an old grave at Rode Bay, north of Jakobshavn near Disco Bay. Mr. O. MATHIESEN, manager of the colony in Ritenbenk, who obtained it from the Greenlander in question has kindly presented it to me. I here wish to repeat my thanks for this rare article. It is twisted up into a small bundle. One of the small pebbles which has served as a sinker is still attached. On that side of the bundle which has faced the open air — the net has probably been inserted in a fissure

between the stones of the grave — there is an incipient vegetation of lichen-soredia. It is very frail, and I have not dared to try and

Fig. 28. Seal net for use under the ice, of whalebone strings, with one of the sinkers attached.

unfold it entirely. Out of the best preserved part, which was turned downwards, I have carefully got enough unravelled to allow of my seing

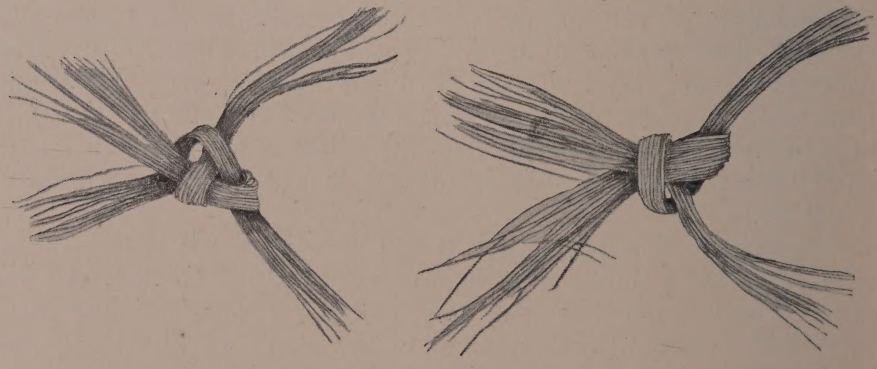

Fig. 29. A knot of the seal net shown in Fig. 28; seen from two sides.

the size of the mesh, which was from 8—10 cm. This is certainly smaller than the size of the mesh of far the greater number of nets made for hunting *Phoca foetida* nowadays. Nevertheless, none of the

Greenlanders to whom I have shown it doubt its having been an ice net for just such hunting as this. The upper rope which is of thin rawhide-line without floats also speaks in favour of this.

The net is made of strings which are not twisted. In each string there are from 20—30 fibres. By soaking a couple of knots (Fig. 29) in warm water with a little alkali added it was seen that the net had been knotted with knots quite identical to those which are in use at the present day; it is therefore made from one long continuous piece of line. That net which PARRY found is described as "a curious kind of net having large open meshes of about two inches diameter, and entirely composed of small, strong hoops or rings of whalebone firmly lashed together with thongs of the same material." The measure indicated, "two inches," is certainly absurdly small for a seal net if it is not a misprint, which the expression "large open meshes" might suggest. The method in which it is knotted is, as will be seen, much more primitive than the Greenland method. As regards the net in the museum in Copenhagen, I have not been able to find any information regarding its size or the method of its knotting.

Shooting Screens.

As mentioned above under "methods of hunting on ice" for *aorneq* a small sledge was often used, to which was fixed the shaft of the thrusting harpoon and on the sledge was fastened a small screen, (*tâlutaq*, 351) behind which the hunter could conceal himself. The Greenland tradition says that the idea of this trick is supposed to have originated from watching the Polar bear, which, so the natives insist, sometimes pushes a piece of ice in front of it when it wants to steal upon a seal. Before colonization the screen naturally consisted of thin white skin, now thin linen is always used for the purpose.

When, with the introduction of the rifle *aorneq* fell into disuse, and was succeeded by *ũtorneq*, the sledge had to be re-fashioned for the use of the rifle. This, however, scarcely took place all at once. In E. K. KANE: Arctic Explorations, I, p. 243, a figure is given which is supposed to represent HANS HENDRIK, the Greenlander, with shooting sledge and screen. Perhaps the figure has been drawn later, from memory, or else the sledge has been improvised, because, as shown in the figure, it is very unpractical. The form which a sledge with a screen now has seems to be fairly perfect, and is everywhere essentially the same, the small deviations which occur being due to the personal skill or taste of the owner.

The shooting screen must be capable of giving sufficient cover, of being easily pushed forward in a creeping position, of providing a good rest for the rifle at any time, and finally of being easily taken to pieces, so that it can be packed together in a small space on the dog sledge.

The sledge (*qamutaussat*, 129) (Fig. 30) has two runners (*qamutitai*, 129) which are 25—35 cm. in length, 7—10 cm. in height. These runners are furnished with strips of shaggy skin (*perdlait*, 293) to prevent any crackling in the frozen snow. In front the runners terminate in a couple of down-turned crooks (*nigsik*, 247), which have to grip the lower cross-beam of the screen. The runners are connected by two cross-beams (*naput*, 237) and into each of these is mortised a perpendicular piece of wood (*napariussai*, from *napariaq*, 235 and *-ussaq*, 458), with a notch at the top for the rifle-barrel. These two pieces are again connected by a horizontal piece, round the ends of which the lashing which holds the rifle-barrel to the sledge is secured.

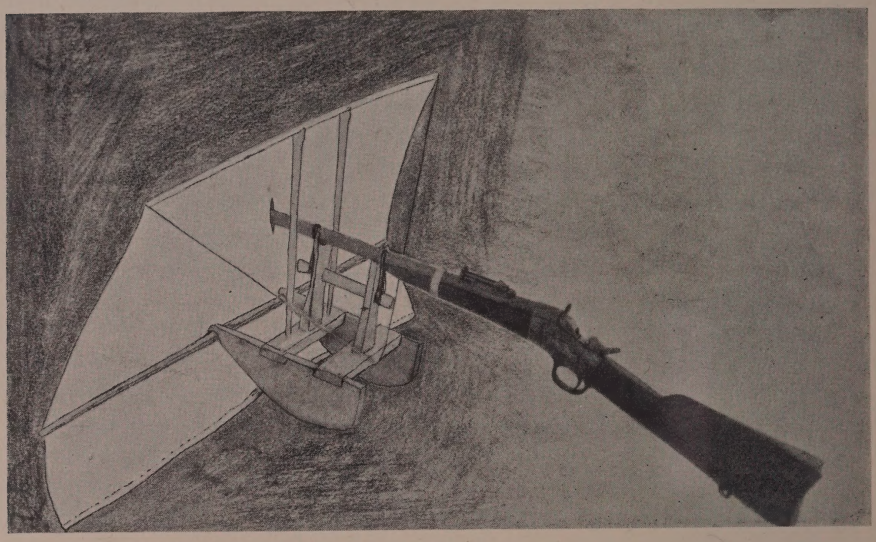

Fig. 30. Shooting screen for seal hunting on ice, mounted on a small sledge and with a rifle attached, ready for use.

For use on ice the screen itself (*tâlutaq*, 351) is 80—100 cm. in width and 40—50 cm. in height. The top edge of this is sewn round a cylindrical cross-beam (*sanerutâ*, 313), the ends of which project slightly, and at the height of about 10—12 cm. from the lower edge a similar cross-beam is attached by some stitches to the back of the screen. That piece of the screen which hangs below the lower cross-beam (*uniakalâ*, Supl. 52) is weighted at its bottom edge by sewing some shot into it. In the centre line of the screen is a vertical slit for the barrel, large enough to allow one to take aim with the rifle.

When the hunter goes out otok-hunting, the shooting sledge is suspended from the cross-beam of the uprights of the dog sledge, while the screen with its stretchers is rolled up and put into a skin casing, which is fastened to one of the uprights. When he arrives on the hunting ground, the rifle is lashed on to the shooting sledge, the lower cross-

beam of the screen is attached to the crooks of the sledge, a couple of stretchers (*naparqutai*, 235) with holes at the top are stuck in under the upper cross-beam, their lower, pointed ends being pushed down into a depression in the front cross-beam of the sledge, while the screen is tightened so as to slope slightly backward by an adjustible line, which hooks on to a peg on the hind edge of the sledge.

From this shooting screen (Fig. 30), which is therefore an old invention, but remodelled since the introduction of the rifle, the shooting screen for kayak use (Fig. 31) has developed, which is of rather recent date, but nowadays so common in the northern part of Danish Greenland that hardly a kayak is without it. The screen is built in a similar manner, but is smaller, being about 70 cm. broad and 30 cm. high. In the centre the lower portion is cut out for the fore end of the kayak. Instead of the sledge here is a wooden block with a dovetailed slot which fits the kayak, the fore end of which

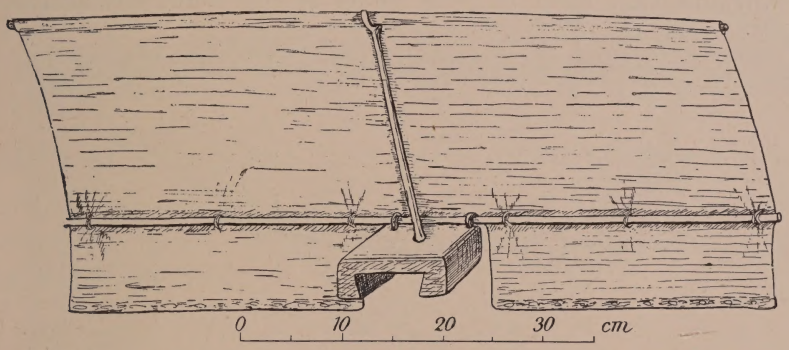

Fig. 31. Shooting screen for kayak, seen from the hunter's place.

in transverse section forms an inverted isosceles triangle. This piece of wood (*tâlutarfik*, place for *tâlutaq*) has on its front edge two hooks which grip the lower cross-beam, on the top there are holes into which one or two stretchers fit tightly, so that a tightening-line can be avoided. The screen therefore is held fast only by the tension of the cross-beams.

This small shooting screen cannot hide the kayak and hunter entirely, but when it is in use the hunter has a white linen blouse outside his other clothes; it only reaches to the middle of his chest. Further he has a white cover for his cap, and in recent times it has become more and more common to paint the skin covering of the kayak with white oil colour, which prevents the skin from absorbing so much water and becoming so heavy and also increases its durability. A white-clad hunter in a white painted kayak with shooting screen may thus, seen from the front, astonishingly resemble a block of ice.

If the wind becomes too strong, so that the shooting screen is in

the way, the hunter can rid himself of it by pushing the *tâlutarfik* down with the end of his paddle. Then he picks it up, takes it to pieces, and stows it out of the way. If he wishes it put on in open water it is put together and the lance point is inserted into the rear edge of the *tâlutarfik*; he can then pull it in over the bow of the kayak, and the jerk which is necessary to pull the lance point out is sufficient to fix the piece of wood.

The shooting screen on the kayak has necessitated a new alteration of the latter, viz: the drift rudder, (*aqûta*, 13). It consists of a small piece of wood, 20—30 cm. long the form of which is clearly shown in the figure (Fig. 32). Originally it was simply tied round the stern of the kayak, but the above mentioned family GEISLER here made a small improvement by cutting a couple of incisions in the keel timber of the kayak, before the skin was drawn on. When, during the process of drying, the skin shrinks, a hole for the lashing appears between the skin and that strip of bone which at this point strengthens the

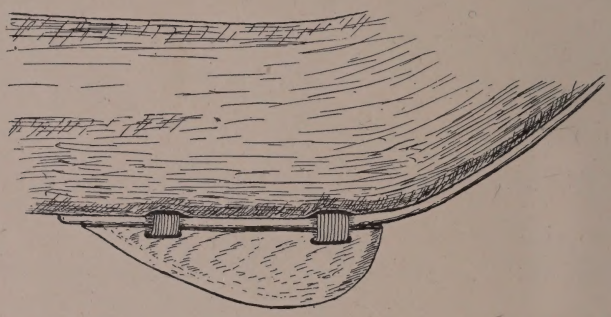

Fig. 32. Drift rudder attached to the keel of the kayak.

kayak, and which acts as the runner when the kayak is pushed across the ice. When one steals upon a seal the rudder has to counteract the effect of the wind catching the shooting screen which may force the kayak out of the desired direction, or it has to counteract the effect of the last stroke of the paddle which would otherwise cause the kayak to veer and render concealment illusory. The lashing is just sufficiently tight to keep the rudder in a vertical position, but not too tight to permit its folding up without breaking when, on landing, the kayak takes the ground.

The Rifle-bag for the kayak.

In the early days which followed the introduction of the rifle, this was carried lying between the legs of the hunter in the kayak, but as the rifle was a muzzle-loader the charge could not be extracted, and by reason of the lack of space in the kayak the rifle had to lie with its barrel pointing backward. This involved numerous accidents,

and by degrees the rifle bag (*pôrtaq*, 301[1]) came into existence on the deck of the kayak, which, now, in several districts is enjoined under penalty by the native administration.

The rifle-bag consists of old stiff boat-skin; at its pointed end there is a strap which is buttoned to a small bone-toggle which is secured to a line sewn fast to the deck of the kayak; sometimes a small bone hook is preferred which catches in a small loop. The opening is stiffened with a ring of iron or wood; it rests on a low tripod of wood which has its place under the line-rack, where it is in various ways fixed to one of the cross-straps of the kayak. This tripod has to raise the opening of the bag sufficiently to prevent the sea from washing into it.

In the winter the rifle-bag is removed; it is released from ring and tripod and carried in this form on the dog-sledge, or it is provided

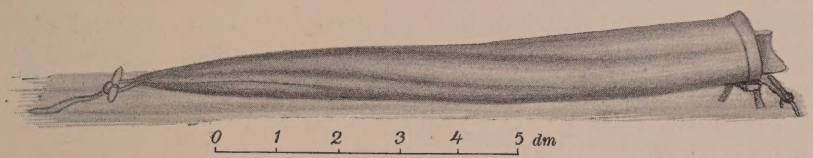

Fig. 33. Rifle-bag with tripod, attached to the deck of the kayak.

with a carrying-strap when the hunter hunts afoot on land or ice. Like everything else the rifle is ordinarily carried with the carrying-strap across the forehead.

Towing Implements and Drags.

Having laid low his prey the Eskimo kayak hunter wants to take it home with him. Birds and fish he puts on the kayak, merely thrusting them under the straps; a small seal is taken home in the same manner if the man is clever and the weather not too bad. But if the seal is large or if the prey consists of walrus or white whale it has to be towed, and for this a set of towing tackle is required.

The object is the same everywhere, namely to fasten the seal to the kayak so securely that it shall not get loose of its own accord, and yet in such a way that the hunter, if he wishes, can free himself of it by a few movements of his hand, at the same time guarding against its loss when loosened, and to secure it in such a position as to offer the least possible resistance in the water, while causing no list of the kayak. Just as the object of the implement is everywhere the same, so is the principle of its construction. But that does not prevent the individual details from varying somewhat ac-

[1] This word was originally used to indicate the skin bag in which the bow was carried in order to protect the sinew backing from getting wetted.

cording to the size of the animal, the conditions of the sea where these implements have to be used, and the personal taste and skill of the user.

As the individual bone pieces naturally are found in ruins and graves, just like all other implements and as they have sometimes been misinterpreted, being conceived as entirely different implements, even as weapons, it will perhaps be appropriate to describe the implement in its entirety. True, FABRICIUS has already done this and done it just as excellently as he has described the weapons, but partly because his drawings are so bad that they are only really comprehensible to one who has some previous knowledge of the subject, and partly because the details and names mentioned in connection with them disagree somewhat with those here at Disco Bay, I prefer to describe the towing tackle as it is most commonly used here.

The complete implement (see Fig. 34) is called *kalutit*, 165. It consists of a heavy rawhide-line 2.5—3 metres long, which carries at both ends a spindle-shaped piece of bone, 12—18 cm. long, the neck-piece (*a*) (*malasiut*, from *malaq*, 198, the front of the neck; in FABRICIUS it is called *mangivsiut*) and a semi-globular and sometimes almost disc-shaped bone-block (*b*) which is called *nagtoraq*, 217. What is meant to be understood by this root-word is that something is bent, so that the sea-eagle, from the shape of its beak can be called *nagtoralik*, "the one provided with *nagtoraq*," which might suggest that at other times, or in other places, the implement had quite another form.[1] *Malasiut* and *nagtoraq* are connected in various ways, two of which are shown in the drawing. Generally, however, at least two, and sometimes three, pieces of line connect them.

The one *malasiut* is thrust under the skin and turned cross-wise almost at the upper end of the breast bone, the other is placed in a similar manner right out at the point of the lower jaw, and the two *nagtoraq*-pieces are thrust below the cross straps which cross the deck of the kayak just in front of the man-hole. In order, later, easily to withdraw the *malasiut*, this is provided at the short end with a bit of line (*c*) (*nusugtâ* from *nusugpâ* "he pulls it towards him," 258; in FABRICIUS *nuitsiut* of the same root), which may often be provided with a small bone knob to give a better hold when the line is greasy, or when the mittens are very wet.

Midway along the line are placed two other implements, the navel piece (*d*) *kingugdlersiut*, "that which enters into that which is further back in succession," in Fabricius *ikiûtínguaq*, "a small expedient" and (*e*) *qissugtaussaq*, "the one which resembles that wooden stopple (*qissugtaq*, 150) round which the openings of the large bladder

[1] Even when the *nagtoraq* is not at all bent, but is only a clumsily made block, it is nevertheless known by the same name.

are lashed." The navel piece is here always a hinged toggle of complicated construction, see figure; in FABRICIUS it is simply a bone staff of similar construction to that of the neck pieces. It is

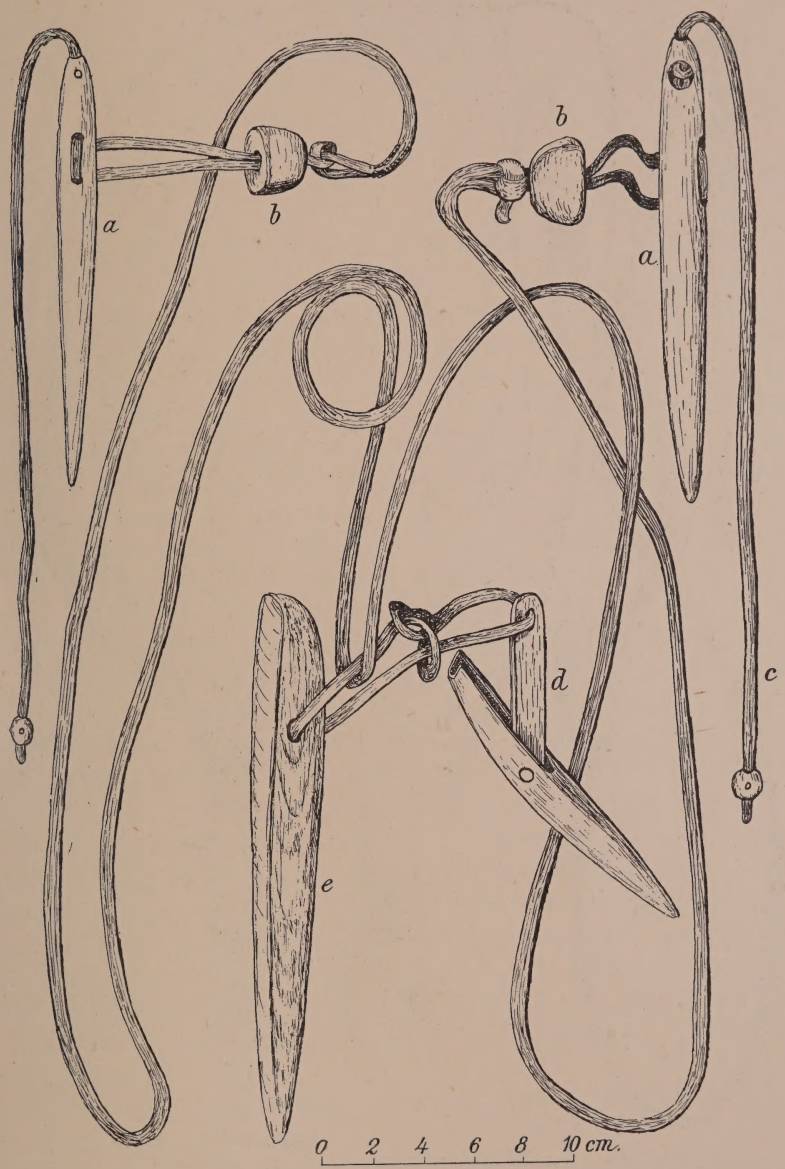

Fig. 34. Implements for towing seal from kayak. For further particulars see text.

thrust under the skin through a small incision at the navel, and the *qissugtaussaq* is placed under the strap behind the hole in the kayak. These two pieces are joined by a small bit of rawhide-line, and the manner in which it is done is sometimes a real puzzle (see figure). *Qissugtaussaq* is sometimes made of wood.

That the weight of the seal shall not cause the kayak to list, and that the hunter may secure himself from loss of the seal by sinking

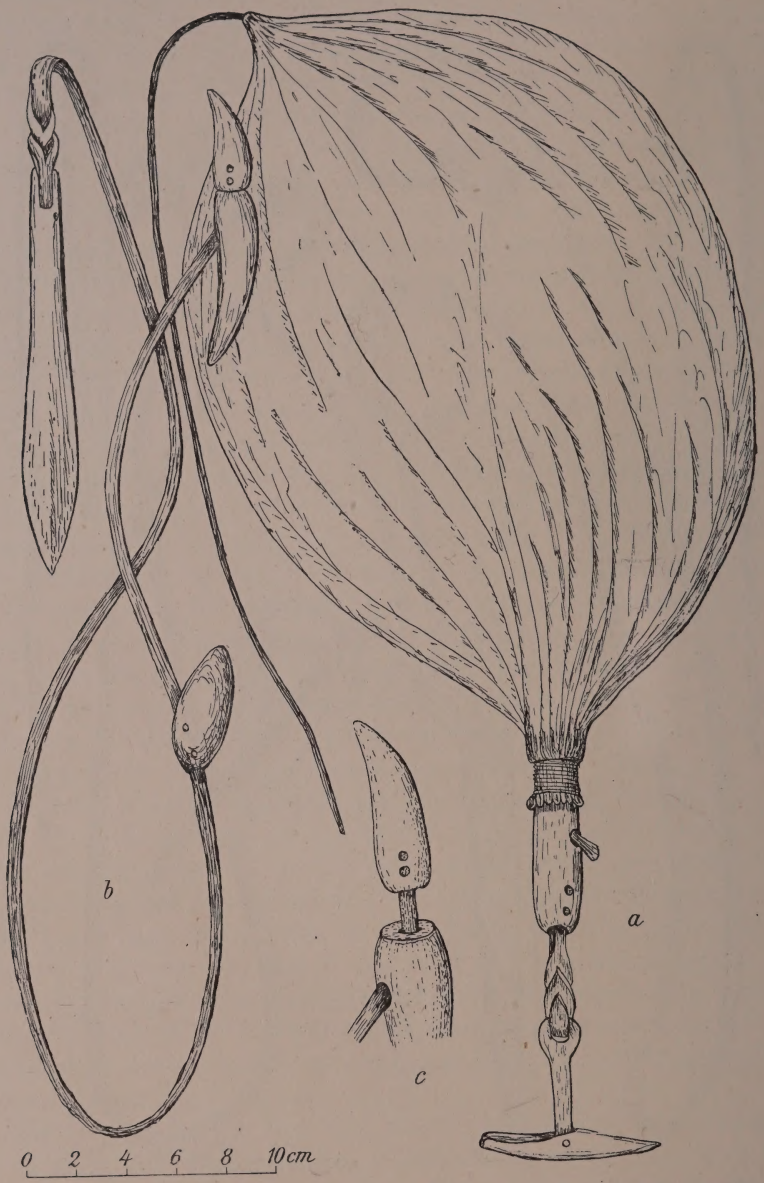

Fig. 35. *a*, Float to attach to the seal while towing; *b*, seal-drag, used on ice; *c*, detail of toggle of the drag.

in case he should let it loose in order that he may go in pursuit of another, the seal is inflated through its natural openings, or is provided with a towing-bladder, *avataussaq*, 62 (see Fig. 35, *a*). It is

frequently made from the stomach of a seal or porpoise. At one end it has a bone-piece, through which the bladder is inflated, *puerfik* (described above p. 153) and in which there is a toggle by which the bladder can be fixed either on the animal direct or between the two straps which connect the chin-piece with the *nagtoraq*. Here this toggle has almost always the form of a *kingugdlersiut*, only it is smaller. At the other end of the bladder there is a piece of line to wrap round it while it lies in the kayak.

When the seal is big an implement resembling that shown in Fig. 35, *b* is frequently used, only it is smaller, and has in particular a shorter line. Then it is called *talerorsiutínguaq* (from *taleroq*, 354, the fore paw of a seal), while the implement shown here is in reality the drag most generally used on the northern part of the west coast to drag the seal over the ice. In this form it is called *orsiut*, 267. It consists of a line about one metre long, which bears at its one end a lance-shaped, well pointed and sharpened needle of bone, which is here called *upássutâ* (probably from the same root as *upagpoq*, 399[1]) and in South Greenland — with the smaller implement — *nuissautâ*, 256. The large front paws of the seal are pierced with this needle and the line drawn through them so that both paws lie between the two pieces of bone at the other end, after which everything else is made fast, and in such a manner that the paws do not offer resistance. When the ice-drag is used the needle, on the other hand, is thrust through the seal's nostrils and out through its eye and the line is drawn after until the toggle at the other end is set cross-wise. This toggle is often simply a piece of bone with a hole in its centre; the one shown here has a particularly ingenious form in as much as it is a combination of two curved pieces, which are joined together at their blunt ends (see Fig. 35, *c*). The pull on the line places it cross-wise, and when it has to be extracted the line is relaxed so that the two pieces can be inclined towards each other, and withdrawn the same way, this saves the whole line having to be hauled back, which would be rendered difficult by the form of the central piece of bone.

The *orsiut* with its bone needle is sometimes also used for stringing fish.

The hunter often carries with him several sets of such towing and dragging tackle.

When the seal is being dragged over the ice a special man's harness is used for the purpose: a large strap of hide which is placed

[1] The root of *upagpoq* is surmised by Kleinschmidt to be the interjection *upâ*! which is used in play with small children who are just beginning to take notice: "See here I am" (formerly I was hidden) or in English "peep-bo!" Consequently *upassutâ*, should signify something like "the one who gets it (the line) to come in sight after it was hidden."

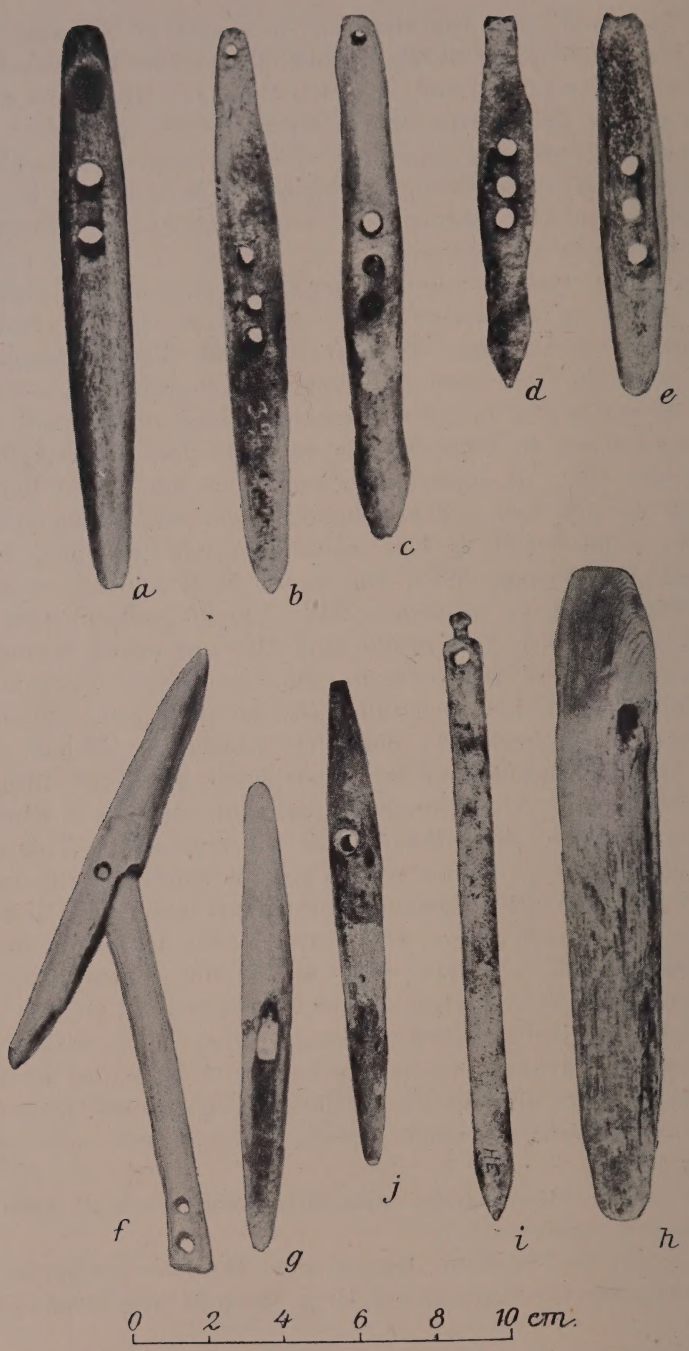

Fig. 36. Details of towing implements and drags found in the earth.

round the forehead or over the breast and shoulder, and has at the back a bone ring of similar form to that used in dog harness, but

generally of rather superior finish. A short trace is then attached to this with a bone cross-pin, as with a dog trace, and the other end is made fast to the *orsiut*. *Kalutit*, however, is often used for this, or one is content with *orsiut* alone, and fastens it in some strap or thong.

Fig. 36, *a*—*e* shows various neck-pieces for *kalutit*. Fig. 36 *a* is of a whale's bone, very substantial and of the same construction as those shown in Fig. 34, *a*. The others have three holes in the centre and there are grooves for the line between two holes on each side alternately. They have been joined to the *nagtoraq*-piece in a slightly different manner in that the line has formed three connecting pieces.[1]

a. A whale's bone, Kronprins Eiland.

b, *c*, *e*. Antler, Hunde Eiland.

d. Antler, Kronprins Eiland.

Fig. 36, *f* and *g* are navel-pieces. In *g* the handle is wanting. Both are of antler; Hunde Eiland.

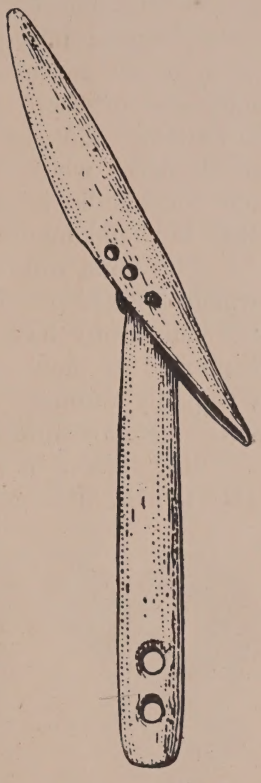

Fig. 37. Copy of a figure of a *kingugdlersuit* which Mason has erroneously published as a harpoon for *itsuarneq*. From East Greenland (After O. T. Mason).

Mason (pp. 237 sqq.) in his monograph on harpoons, explicitly mentions the peculiar hinged and riveted harpoons for *itsuarneq* and fishing described by Holm from Angmagsalik, and says, very correctly, that as regards their form they are unique in America. Mason then illustrates in his Fig. 23 an implement which he calls "hinged toggle head, East Greenland, after Gustav Holm." The figure is reproduced here (Fig. 37) and it will be seen that it is the navel-piece (*kingugdlersiut*) for a towing outfit, and that it has been more than once repaired by riveting. The figure does not appear in Holm and must be a drawing from a specimen in Washington Museum. It is strange that an implement of this kind can be regarded as a harpoon, because the movable piece, especially after its having been repaired, cannot here be turned far enough to become a prolongation of the handle, nor is it sufficiently pointed and when thrust invariably turns on one side and fails to

[1] Swenander has amongst his harpoons an odd form where the line has been fastened with a knot in the harpoon itself and has afterwards passed through three serial holes with grooves on the sides alternately. Perhaps it is a *malasiut* which has been hastily (for *savssarneq*?) converted into a thrusting harpoon.

penetrate. A single glance at the harpoons excellently figured on HOLM's Table XVI, and described by him, will convince one that these are quite differently constructed.

Nevertheless, THALBITZER has made the same mistake. In Figs. 79 and 80 he has illustrated two navel-pieces from West Greenland and calls them "toggle harpoons for sealing or salmon spearing on ice," and on p. 355 the author states, in consequence, that the peculiar *itsuarneq*-harpoons of the Angmagsaliks have also been employed in West Greenland. But THALBITZER's figures show a couple of quite normal navel-pieces which could not possibly be used as harpoons. On the one the handle is curved and on the other it is so long and thin that it would immediately break when thrust into the prey.

The same author shows in his Fig. 81 the little hinged toggle which is fixed in the towing-bladder, but as regards this he says: "It can hardly have been used as a harpoon, but must have been employed to hold a sealskin float in the kayak." This explanation is equally strange. A hunter who attached his buoy to his kayak with such an automatically acting toggle would incur certain death.

Fig. 36, *h* is a *qissugtaussak* of wood; *i* a *upássut* of bone, remarkable for the little tenon which has to be spliced into the line. Authors sometimes call *upássut*-pieces "needles for stringing fish" and they can, ofcourse, also be used for this purpose. A needle which is specially made for this is generally not nearly so strong, and has no need to be so. Fig. 36, *j* is an undivided toggle for the rear end of an ice-drag. The hole is advanced close towards the one end, in order that the toggle may be more easily turned on one side when it has to be extracted.

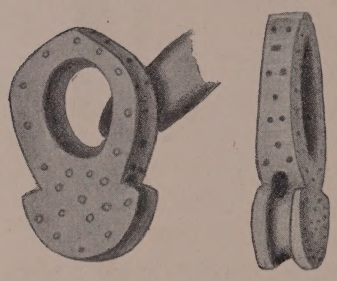

Fig. 38. An *orseq*, for a man's harness for dragging seal across the ice; side view and half-face view.

h—j. Hunde Eiland.

Fig. 38 shows a harness-ring, (*orseq*, 267) of ivory for a man's harness, from Kronprins Eiland. It is ornamented with some irregularly drilled holes. The hole for the toggle is large and rounded at the edges. The line-hole is specially complicated: care has been taken that there shall be a sufficient thickness of material; the splice is concealed below high edges, so that the toggle gets a free and smooth surface of bone upon which to turn. I do not hesitate to declare that this would be the strongest and most appropriate form of construction which an *orseq* for use with sledges could have; but I am told that no Greenlander would put so much into the making of an entire set of harness-rings for dog harness.

X. Man's Tools.

The Bow-drill.

The most important and most indispensable of the tools belonging to the Eskimo man are the knife and the bow-drill. They can be produced everywhere in the Arctic from the materials which are found or can be procured there: stone, bone and rawhide. The first Eskimo, who in primeval times came to the Arctic Sea, may have brought with him metals from happier regions, but when these were worn out a substitute could only be procured by lucky chance from wrecks or from meteoric, and in a single district in West Greenland, telluric iron. But these chances were so rare that they could not be depended on, and therefore we see stone implements employed on a large scale, even in the districts here in Disco Bay where telluric iron is found.

Not only are all the larger and smaller holes required by the implements for riveting, joining with bone nails, sewing with sinews and lashing with rawhide lines produced with the bow-drill, but also the row of holes which are preliminary to the separation of the small pieces of bone required from the large pieces. In a slightly altered form it is used to produce fire. With bow-drill and knife made from elementary materials all the complicated hunting weapons, vessels and sledges, harness, household articles and instruments for the dressing of skins for clothing can be produced.

Even to this day the cleverest and most expert workers in bone, wood and soapstone use the bow-drill, and often prefer it to European instruments which they could easily obtain if they would. Now, of course, the point itself is of iron or steel. The instrument consists of the handle (*niggit*, 250) — a piece of curved bone about a foot long, and generally of antler. In each end is a hole in which is fixed that piece of line which has to set the boring shaft in rotation. The drill, that is to say the point itself, (*niortût*, 250) which formerly consisted of bone or stone, is fixed in a shaft of wood or bone 15—20 cm. long. In the first instance this is often provided with a bone button at the upper end, in order here to lessen wear and friction. In order to guide the boring shaft and to give it the necessary pressure, a small piece with a hollow in which the upper end of it revolves is used. There is now always a casting of lead in the mouth-piece in order to lessen the friction, so that the specially required bone from the foot of a Caribou is no longer needed, and the upper end of boring shafts need no longer be capped with bone. This piece, which is held between the front teeth, (*oqúmiâ*, 266 or *kingmiâ*, 186) is often a special bone, of suitable shape, from the foot

of a Caribou, but is often, also, a bone[1] fashioned for the purpose. Fig. 39 shows handle, mouth-piece and bone point; all of antler, Hunde Eiland.

Knives.

The word *savik*, 316, common to all Eskimo, everywhere means both iron and knife, a man's knife in particular. The question is, which meaning is the older. The idea that *savik* originally meant "something cutting" consequently "knife" is supported by KLEINSCHMIDT in his well-known dictionary, and as KLEINSCHMIDT indisputably is that author who has had the most profound understanding of the Eskimo language it might seem bold to hold other views. It seems to me, however, that the following circumstances speak in favour of the idea that *savik* originally meant iron.

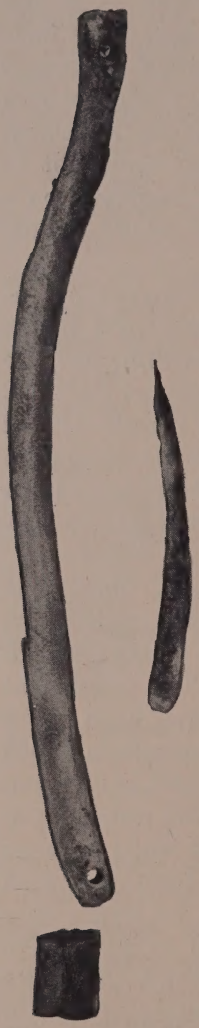

Fig. 39. Handle, mouth-piece and bone point of bow-drill.

1. In most of the derivatives of the word mentioned by KLEINSCHMIDT it is the iron and not something cutting which is thought of.

2. In the place-names which are generally very old words, and often contain archaic roots incomprehensible to the present generation, *savik* or forms of it are often found to be a designation for places where there is meteoric or telluric iron, but never for places where a special abundance of material for stone knives exists.

3. With implements and weapons where a cutting blade of harder material is inserted (arrows, harpoons, lances, etc.), for instance a blade of ivory, stone or metal, this blade is never called "*savia*" but always "*ulua*," so that the primary signification of "something cutting" seems to be the *ulo* which now is the designation of the woman's knife.

[1] RYDER shows in his Fig. 22 a fragment of an implement from East Greenland which he understands to be the handle of a bow-drill. This however is scarcely correct. The line has gone out through a hole at the end of the piece and the edges of the bone hereabouts are rounded off, so that there is the least possible difference in thickness between the bone-piece and the line. All this is characteristic of a *pâguaq*, the side of the angle beneath the buoy. In the bow-drill this construction would be useless, and even detrimental to the line, here the holes are bored transversely near the end. I mention this because the V formed *pâguaq* used at Disco Bay is not mentioned by HOLM from Angmagsalik, while another implement also found on the bladders from South Greenland is indicated (Tab. XIV.).

4. Ancient appellations are to be found for the oldest, genuine forms of knives, stone knives in particular, and in them the word *savik* or derivations therefrom do not occur, for instance *sánat*, *sánardlit*; ancient implements resembling knives are likewise given appellations in which *savik* is not included, for instance that knife-like implement for removing ice from the kayak: *sermîaut* and the snow knife: *pana*, etc.

5. Newly formed words, also, are interesting in this connection, as they show the idea that lies at the back of them. In this way is formed the word *savequtâ* (some iron which is placed on a thing so that it is an essential or integral part of this, or some iron which makes the thing just what it is) from *savik* and the suffix *-qut*, 425. It is, for instance, the common term for the gun-lock, but it may also signify the engine in a steamer or motor-boat. In the latter meaning the form usually heard here is *savequtaussai*, in which, in addition, the suffix *-ussaq*, 458, (something which resembles a thing or is supposed to be a thing) is adopted, so that a fair rendering of the word would now be: "the pieces of iron applied to it which are so essential to it that they just make it into what it is."[1]

On the other hand a scythe is called *kivdlût* from *kivdlorpai*, 183, "he cuts a piece off the length of several simultaneously."

Nor does the fact of the name of the metal being transferred to the man's knife militate against this conception, because it has been beyond doubt first employed for this, just as there is no doubt that if we should deprive our present-day Greenlander of iron, the deprivation would nowhere be felt so keenly as in the production of a knife with which to make the rest of the implements.

How a stone knife was manipulated by the Eskimo.

In my collection of stone implements from West Greenland there is a considerable number of knives of all possible dimensions, ranging right down to tiny knives of rock crystal, which, according to the tradition among Greenlanders at Disco Bay are assumed to have been used for cutting boils. Some have a single-edged, others a double-edged blade, and there are, as with the other stone-implements (harpoon and lance-points, etc.), both polished and unpolished forms amongst them. As, however, I lack literary aid in this respect, I prefer to postpone the description of these things to some other occasion, and here to content

[1] It must not be thought that *savequtâ* has become a fixed term for the gun-lock and *savequtaussai* ditto for a boat-motor. No, the derivation given above is apprehended and understood by the Greenlanders of today just at the moment the word is spoken, but he can only understand the signification of it — for instance the one given here as an example — from the context of the conversation.

myself with describing their bone-handles, together with the manner in which these were employed. Just as it is true that the access to iron has been of epoch-making significance to the Eskimo, as to all other primitive people, and that the possession of iron has improved his implements and given him a step forward in civilization, so is it certain that all the essential and characteristic features of Eskimo culture have developed without the help of iron, for which reason, also, Eskimo culture, better than any other form of culture is adapted to serve as a basis for the study of the culture of those people of the stone-age who lived in Central Europe under climatic conditions corresponding with those of the Arctic regions of the present day.

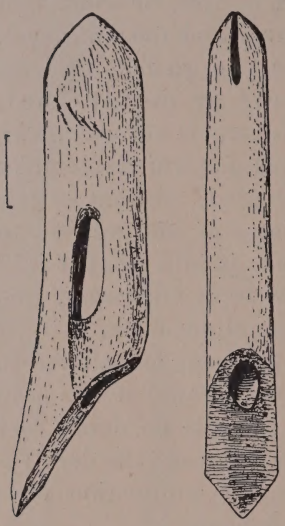

Fig. 40. Harpoon from West Greenland which MASON, on account of its form and regular execution, considers was made by machinery and imported: in reality it is a very old form and has even had a stone blade (After O. T. MASON).

In the literature it is not unusual to find the significance of iron overrated, or to find doubt expressed as to the possibility of this or that having been made with stone implements. As one example amongst many I shall choose one which closely touches this subject. MASON, in his often quoted book, frequently mentions machine-made harpoons which are first sold to the American Eskimo and afterwards bought by travellers, and finally piled up in museums to the despair of the investigator. Also, he fairly often uses the word "machine-made" about West Greenland harpoons. But, the fact is, there has never been any trade in ready-made harpoons in Greenland (not even the blades being sold in prepared condition), and I greatly doubt whether it would be possible to satisfy the individual demands as regards execution which would arise; the number of these would certainly coincide with that of the hunters. But the author is quite on the wrong track as regards what is old and what is new, when West Greenland harpoons are in question. Specimens are figured and stated in his book as being very old, but from their form they might just as well have been used at the present day as in past days. I allow myself to reproduce one of MASON's figures here, (Fig. 40) and to quote his report of it (p. 240).

"A modern toggle head of a whale harpoon from Greenland is seen in fig. 25. This unfinished specimen shows the last step in the development of the machine-made toggle head. Everything about the specimen demonstrates this: the mathematical form, the saw cut

for the blade, the socket for the foreshaft, the angular barb, and especially the large line hole cut straight across the body of the toggle head. In the primitive examples this last feature cost the maker a great deal of trouble. He had to bore two holes slanting toward each other and meeting inside, to unite these by removing the rough surface, and to separately prepare grooves to receive the line."

The latter remark I do not understand, as it would seem that the complicated holes and grooves could be produced more easily with the help of machinery than with the Eskimo's primitive tools, so that even if the importance attaching to the various forms of the line holes was not comprehended, yet, at least, the less complicated form would have to be considered as being the more primitive one. But that the author's judgement in this matter is not wholly trustworthy appears from the fact, that this harpoon, notwithstanding the beauty and perfection of its execution is a thrusting harpoon (*kapissiniut*) of ancient form, and one which has actually had a stone blade! There is no rivet hole and if nothing more can be seen on the specimen in question than is to be seen on the drawing, I do not hesitate to declare that it may well have been made with stone tools.

If a man took an old stone knife and started cutting a walrus tooth with it in the same manner as he sharpens his pencil with a pen-knife it would be a most tedious task indeed before a harpoon was turned out. Even if the Eskimo had more time as well as more patience than we, I think, nevertheless, that he would hesitate before he began. But the Eskimo had another and more effective method of working. From the above statement by Mason, and from similar statements by other authors, I must presume that this method of working is not known at all, but neither my own knowledge nor the literature which I here have at my disposal allows me to speak with certainty regarding this point. Amongst the Greenlanders, however, the working method of the stone knife is not only well known, but the method itself and the grips are used to this very day; the old method from the stone-age has as a matter of course been found practical for, and has been converted to the use of the modern steel knife, and it is dispensed with only when a vice, a file and half a dozen other up to date tools can be afforded.

Before describing this method we must consider the handles of some knives which together with the bow-drill have been used as universal tools for the production from bone and wood of weapons and various parts of instruments.

Fig. 41 shows five different bone-handles for stone knives. Fig. 41, *A* is of antler, somewhat unfinished. At the one end an oval hole

Fig. 41. Five specimens of *sanardlit* from Disco Bay.
A, Handle of antler with deep, oblong socket for the blade, less deeply rounded socket for the guiding stick in the rear end. *B* is a similar handle of greatly weathered ivory. *C*, *D* and *E* of antler, have notches cut in them for lashing to the guiding stick. The stone blades have not been found together with the handles, but, from a large collection of blades, some which fitted into the existing sockets have been inserted according to the directions of a Greenlander. In *A*, *C* and *D* the blades are of greyish blue porcelain jasper; in *E* a double-edged piece of red and white stripped agate has been inserted into the very narrow, and only 1/2 mm. deep, groove at the edge. The last knife-form has been used as an instrument partly for finishing large carvings and partly for the fashioning of lashes, lines, etc. from rawhide thongs.

has been bored for the blade and at the other there is a socket which is not deep, but well rounded at the edges, the importance of which we shall see later. On the one side are a couple of crescent-shaped incisions, which may be ornaments, but perhaps are there only to give a firmer grip for the hand. Disco Fjord.

Fig. 41, *B* is quite of the same type, but it is greatly weathered, flaky and fragile. Walrus tusk. Disco Fjord.

Fig. 41, *C* is quite another type. In the upper end is found the usual rather large hole for the end of the stone knife. It is oblong in transverse section and is made by boring. The other end is cut obliquely in two parallel cuts which do not lie in the same plane, but are connected by a notch cut like a step. The upper end of the shaft is well rounded and slightly constricted, in transverse section elliptical, and here a hole for fastening a piece of line is made at the edge. Antler, Disco Fjord.

Fig. 41, *D* most probably is the same type, but not so well preserved, most of the lower, slanting surface being wanting. There is no hole for the line, but there may have been one lower down. Disco Fjord.

Fig. 41, *E* again is a new type. Here also we have the bevelled surface in two steps, on the upper are still distinctly seen the marks of the instrument with which it has been fashioned, and here it is easy to see that it has been scraped with a stone. The traces are slightly rounded grooves, just as they would be if the work were done with the rounded edge originating from the conchoidal fracture in the stone. The lower surface is only partially preserved. Just above the upper bevelled surface there is a piece elliptical in transverse section and a hand's breadth in length, and here we have a line hole which goes straight through it. Above this handgrip the bone becomes considerably narrower, gets the form almost of a knife-blade and on the thinnest edge there is quite a narrow groove produced by scraping which is not a full millimetre broad nor much deeper. Antler, Disco Fjord.

In a finished state, and therefore with a blade of stone inserted, these knives are here called *sanardlit*, plural *sanardlisit*. This word is not to be found in KLEINSCHMIDT's dictionary. It is formed from the verb *sanavâ*, 311 "he manipulates it" viz., "he cuts out" analogous with the word *sitdlit* "a whetstone" from *silivâ* "he whets it." On the other hand KLEINSCHMIDT has another word *sánat* from the same root, which he translates "a narrow long-handled knife which is sharpened from one side and slightly curved at its point (and is the Greenlander's principal tool)."

When working with *sanardlit* of the types C, D, E the bevelled end of the handle was lashed to a stick 20—30 cm. long and fashioned in the same manner. The lower end of this stick was fitted either

into a small niche in the side-wall of the house or into the post exactly opposite the platform or sleeping bench; or else it fitted into a piece of hollowed wood, bone or a piece of old skin, which, with a righthanded person, was lashed round the right leg just above the knee (*serqorut*, from *serqaq* a knee). The right hand grips the handle and the knife now works in a manner half cutting and half scraping towards the worker. If the piece which is being manipulated is long enough, it is held with the left hand in such a way that its ends are supported by the left leg and the chest or chin respectively. If the piece is small, a harpoon for instance, the left hand would tire of holding it between the fingers, and it is therefore lashed in two places to a stick of suitable length, and the lashing is moved, little by little, as the work proceeds. When the cutting edge has become blunt, the piece of work is laid aside, and the knife is sharpened by means of the same grip and movement against a whetstone, which is now held in the left hand; it being understood, of course, that the edge consists of a material which can be whetted: slate or porcelain-jasper.

I invite the reader himself to try this working position; a European pocket-knife lashed to a stick can be used, and better still the half of a pair of scissors, the edge of which more resembles the edge of the stone knife or that of the Greenlander's iron knife. The reader will then be able to convince himself that the position for working and the method not only do not cause fatigue but are also effective, and in a high degree condusive to accurate workmanship.[1]

Nowadays the *sanardlit* or *sánat* of the West Greenlanders naturally differ somewhat in appearance. Poor people are satisfied with a blade consisting of a piece of hoop-iron, tapering towards the fore end, and turned slightly upwards at the apex. Those who are better off can afford a steel blade which has originally been intended for something else, for instance, a butcher's knife, the fore end of which is fashioned according to requirement. This blade is lashed to a semicylindrical shaft, 40—50 cm. in length, so that the sharply ground and bent part protrudes. The hinder part of the shaft may be fashioned in various ways, most frequently it is rounded, so that it does not wear and tear the trousers at the knee. For nowadays men rarely sit indoors without trousers on while working, and kneeprotectors (*serqorut*) are very rarely used, while formerly they were a necessity, because the naked knee would otherwise have been galled.

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[1] When a European boot-maker has to trim the edge of a boot-sole of thick and hard leather, he holds the boot on his left knee, and supports it with his

Consequently, the knife-blade, as far as its working part is concerned, now resembles the crooked carving knife of the other Eskimo tribes and of the North American Indians of our day.

For the handles *A*—*D*, the lanceolate, double-edged knives are mostly used, which in museum catalogues and archæological publications are often called "arrow-points." For the handle *E*, on the other hand, the sharp two-edged flakes of rock-crystal, chalcedon and jasper are used, and this, in transverse section, forms an isoscele triangle with very obtuse epical angle. In my collection there are several specimens which in a length of 3—4 cm. are only 5—6 mm. broad. The one edge of the flake is fixed in the socket of the bone shaft, where it is secured only by pressure against the elastic rim of bone, or, if necessary, with a couple of lashings with thread at the ends, or also with a kind of putty made of blood, oxidized lamp-oil and soot. Such flakes can be as sharp as razors, but the edge is naturally not particularly durable; they are used on hard materials for the final dressing and polishing only. The flakes are principally used for such work as the fashioning of whip-lashes and laces for boots or clothes, where it is, on the whole, a question of the rawhide being well rounded without loss of strength. The finished rawhide-line of the skin of the bearded seal is trapezoid in transverse section and rather hard and stiff, and here the edges are removed by a sort of planing, so that the transverse section becomes elliptical or round; but very sharp knives are required for this.

The knife-handles which are not cut aslant at the end, but which in place of this have a socket, were a sort of hand-knife intended mostly for the man's minor works in skin: for fashioning thongs, traces, etc., or for cutting; but they might also be used for carving. The guiding-stick was then merely pointed at both ends, the one end just being inserted in the socket of the handle; but its stability was not so good, which would be noticed especially in large carvings, though it had this advantage that by slight movements of the hand the blade could be placed at a slight angle to the longitudinal lie of the guiding-stick. If it could be afforded both forms would be kept.

Holm, in his table XVIII, has seven knives with stone blades, of which six are short and lanceolate while the seventh is longer with the shape of an oleander-leaf. A couple of the shafts are broken, and it cannot be seen from any of the others that they have been

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left hand and chin. The knife is held in the right hand, the right forearm rests on the right knee, and the cutting motion comes from his lifting his right heel off the ground. It is, then, a method of working which has this in common with the method described, that the knife is guided by something more than the mere hand.

so adjusted that they could be used with the guiding-stick. A couple of them, the two furthest to the right might, however, perhaps have been used in this manner.

BOAS illustrates from Aivilik a couple of double-edged stone knives (Fig. 125) set in bone handles prolonged with wood. From the form of this prolongation it would seem that they might suitably be lashed to a guiding-stick. The same author has in his Fig. 90 the bone handle for a *sanardlit* of the type Fig. 41, E with a small groove for the insertion of a sharp-edged flake. This handle also is cut aslant below, but not in the same plane as mine is, and has a number of holes which presumably have been used for fastening to the guiding-stick, but whether with nails or lashings cannot be seen from the figure.

Fig. 42 firstly shows four old handles for man's knives for free-hand carving.

A is from the bone of a whale (?), here the blade still remains, it is of iron and fastened with a copper nail. It is worthy of notice that the blade is not fastened in a slit or kerf, but in a narrow, bored out socket, so that the bone has retained its full strength. Disco Fjord.

B is of antler, the blade has been of iron, and has been fastened with two nails; the slit for it has been sawed. Sarqaq.

C is a long, rather thin, slightly curved, pentagonal handle of antler. The blade has been fastened in a rather large socket without the aid of a nail. Save for the presence of rust, the idea of a stone blade would suggest itself absolutely, but in all probability the blade has been a piece of unforged telluric iron. Later, by oxidation of the iron and by desiccation, the bone has split from the socket downwards. Possibly this has been the handle for a *sanardlit*. Disco Fjord.

D is a small knife-handle which broke when the socket for the blade was bored. It is decorated with the dot and circle ornamentation[1] known in so many districts and cultures. MASON (p. 296) says "this decoration, wherever found, is an emblem of the existence of steel tools." This is not strictly accurate. Very few pieces of flint or chalcedony need be chipped off before one finds a piece which, when turned can produce beautiful dots and circles in bone. But as a rule it happens that these figures do differ somewhat from those which are produced with steel tools, because the grooves and ridges are rounded, owing to the instrument being blunt. A sharp steel drill produces sharp edges and he who has steel instruments understands

[1] As regards the occurrence of this ornamentation in primitive art, see in addition, HOFFMANN's observations in "The Graphic Art of the Eskimo," pp. 800 sqq.

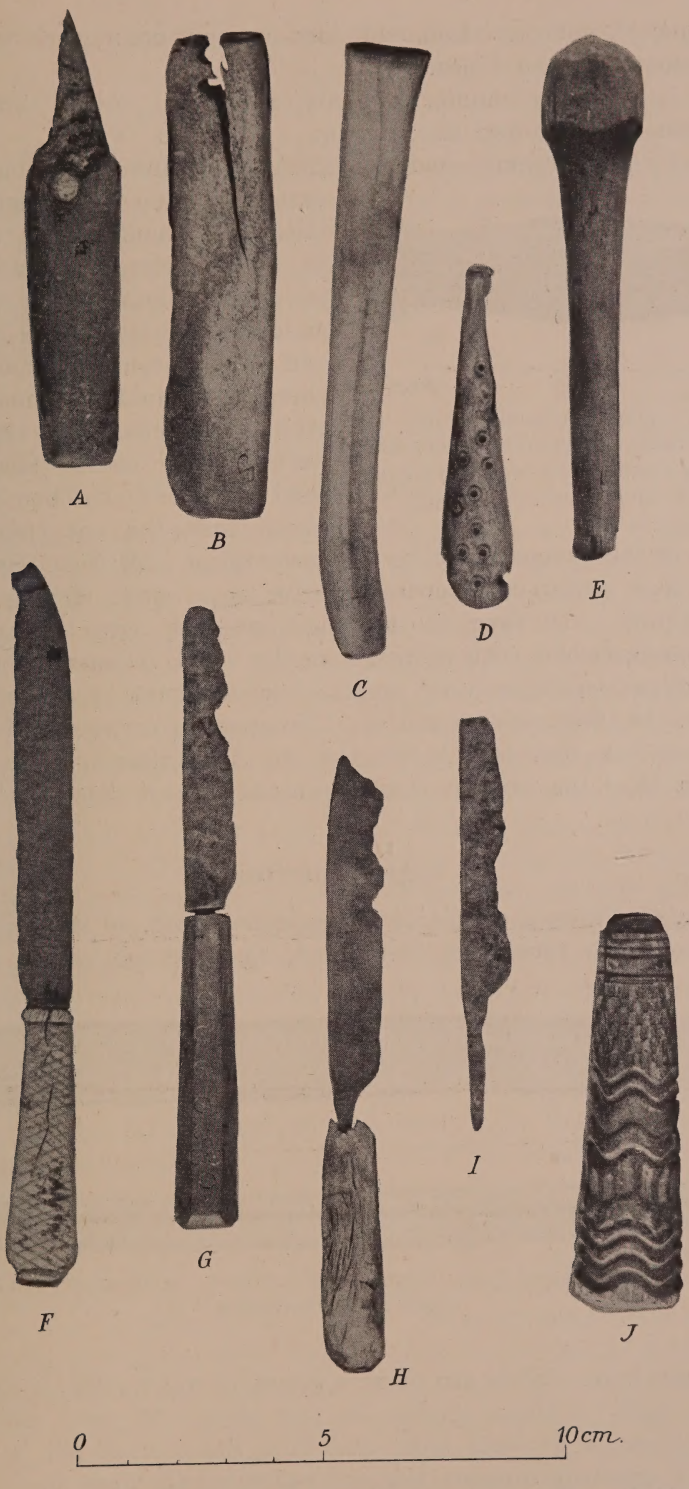


Fig. 42. *A—D*, Handles for man's knives; *E*, wooden handle probably for awl; *F—I*, knives of European origin found in the earth; *J*, richly carved handle for a knife, found in an Eskimo grave, but of European workmanship.

also how to sharpen them and does not purposely work with blunt instruments. Disco Fjord.

E is a wooden handle, probably for an awl. Above, sinew thread has been wound round it. Sarqaq.

F, *G*, *H*, *I* are knife blades of European manufacture, but found in graves together with other antiquities. The handle of *F* is thought to be of European manufacture, while the handle of the others are of local manufacture. *G* has a dot and circle ornamentation, which, here, is undoubtedly made with a steel instrument. The hollows are defined with quite sharp edges, and the fact of the bone not being quite plane has not troubled the maker in the execution of his ornamentation. All from Sarqaq.

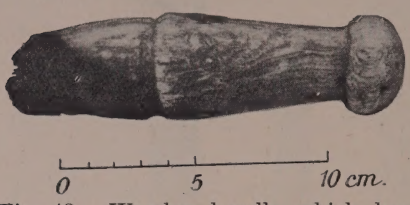


Fig. 43. Wooden handle which has had a blade at its rear end, and which has been lashed at its centre to a shaft and then served as an adze.

J is a richly ornamented handle for a knife, from a grave at Disco Fjord. The tang of the blade has gone right through it. It has been furnished with a ring, and the wood appears to be of oak. The carving which is very regular has no doubt been produced by turning. In short, the handle is of European (Norwegian?) workmanship, and has come here before the era of christianity.

Fig. 43 is the wooden handle probably of an adze.

Edge protectors.

Fig. 44 shows a couple of instruments which, so far as is known, have not been previously mentioned, and are not known either to

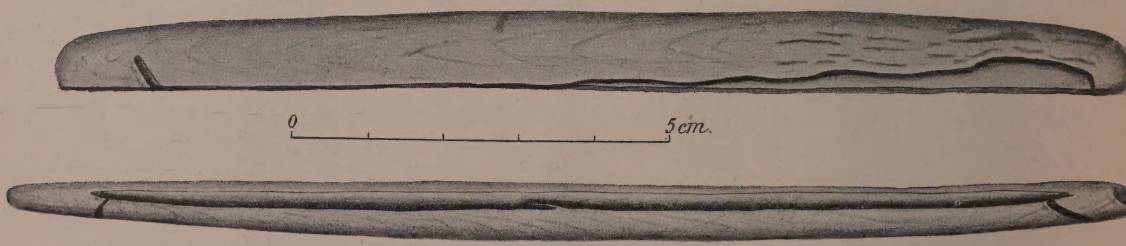


Fig. 44. Two pieces of wood intended for fastening on to adzes to protect the edges when travelling.

everybody here. They are narrow pieces of wood, oval in transverse section, with a deep groove in one side. At each end of the groove there is a small hole, and from this a small slit is directed obliquely upwards towards the side which has the deep groove. They

were used to protect the edge of the adze during Caribou-hunting or other lengthy expeditions, and were made fast with straps of sinew thread. This object is to be found figured in PARRY (p. 548), from the Central Eskimo. From the neighbourhood of Godthaab, also, I have seen similar old specimens in the possession of another collector. Here they are called *íkússivia*, formed from the verb *íkúpa*, 81, "he mortises or fits something into something else in such a way that it entirely fills the hole" and the termination — *vik* "the spot where this takes place," *ulimáutip* "of the adze" being implied herewith. Sarqaq.

XI. Woman's Tools and Household Implements.

The Ulo or Woman's Knife.

The most important implement of the Eskimo women is the Ulo — a knife with a curved blade. She uses it for cutting up and quartering game, and for cutting skins for the purpose of making clothing and foot-wear; in short, she uses it for everything. It serves her in the same way as the various large and small knives and scissors serve the European housewife. Therefore it is natural that such an important implement should have great interest for collectors and ethnographers. Specimens from all tribes have been brought home, and on the basis of the rich collections in the Washington Museum, supplemented by copies of some of G. HOLM's figures of East Greenland forms, O. T. MASON has published a monograph on this implement with illustrations of about 75 specimens. MASON points out that the Ulo is almost as ancient as human culture — that, for instance, old Egyptian reliefs exist upon which a worker in leather is shown cutting skin with an Ulo exactly similar to that used by the Eskimo. He furthermore, and justly, points out that from the same Eskimo districts implements are found which differ in completeness a circumstance due without doubt to the individual ability or personality of the maker, and he also states that the influence of the white man has crept in to complicate the question. In his resumé the author makes (p. 412) the significant statement "In form alone the specimens from each typical area are unique. So much so that one who has handled a great many of them finds no difficulty in relegating a stray example to its proper companionships."

But even in MASON's first table, where he reproduces copies of some of HOLM's figures from Angmagsalik, forms can be found which are comparable to the type specified by MASON as being characteristic of Mackenzie River. MASON solves this problem by stating that both show the result of contact with European whalers and fur traders. It is Nos. 4—6 in my Fig. 45 to which I here refer. But HOLM has

a type which MASON has not reproduced; in the present work it is figured in Fig. 45, No. 3 and corresponds with MASON's type from South Alaska: indeed from each individual district from which a series of specimens of ancient and recent times is forthcoming we can demonstrate all MASON's types, and thereby fully establish the inaccuracy of his deduction. And again his explanation of the influence of European whalers and traders on the forms from Angmagsalik cannot be accepted without question, as it is well known that such an influence had not been exerted there at the time when HOLM visited it.

We must therefore try to arrive at an understanding of the forms in some other way. By following our ordinary method we apparently get no further, as at the outset the first question "What is the object of the implement?" is not so readily answered, since the objects are so manifold; the implement before us being one for universal employment.

Hence, the question must be approached in a somewhat roundabout manner. We find that wherever the white man appears and establishes a regular trade with the Eskimo, a type of Ulo of a distinct form arises, shown in Fig. 45, 1, and it is immaterial which Eskimo tribe is under consideration, and also by whom the implements were supplied. For it is of course not the purveyor who decides how the article is to be fashioned, but the buyer or consumer, in this case the Eskimo woman. We can solely on this account designate this form as the ideal form; and all other forms are thus only attempts at reaching the ideal form which are more or less successful according to the possibility of access to suitable materials. On the other hand, the most primitive forms, produced before iron was accessible, are everywhere the same..

We will now try to get to the bottom of the purpose of the Ulo, especially in its ideal form, and request, for example, a skilled West Greenland housewife to cut up and quarter a seal in our presence, asking that it be done "in the proper manner." This little addition will cause her to place the seal on her newly-scoured wooden floor, and to put on her Sunday clothes. The sleeves of her newly-washed, gaily-coloured jacket of European stuff are rolled up above the elbow, her long boots of coloured skin have on the front fine embroidered ornaments of bits of coloured skin, and if she be young and unmarried she has round her knee a broad piece of fine white linen embroidered with coloured silk. It is now her aim to demonstrate that the whole of the cutting up and the quartering of the big animal can be accomplished without staining her garments with blood. We shall witness a work of dissection where each separate incision gives proof of the experience of generations, handed down from mother to daughter. The Ulo used is the ideal form bought ready-made

in the shop, and very sharp. It is held in such a manner that the handle comes out between the third and fourth fingers.

The seal is laid on its back in the middle of the floor. With one single stroke, hide and blubber is cut through, in the mid line from the anus to the tip of the lower jaw. Seizing the edge with the left hand, the blubber is peeled from the muscle on the belly, the side and round to the middle line of the back, first on one and then on the other side. Now and then an incision is made in the muscle, with a stroke of the corner of the Ulo, so that one finger can grasp and support the body of the animal, while it, as it were, rolls out of the blubber. When the woman gets to the fore-limbs, she grasps the paw, makes a circular cut round the joint and breaks it, so that the paw remains in the skin. The belly is opened, and the intestines, stomach and smaller adhering organs are removed, with the exception of the liver. A piece of the rectum together with the urethra is left behind temporarily; the breast-bone is cut out by means of two parallel cuts, the Ulo being held so that it makes a rift with the corner rather than a proper cut. The lungs and liver are then removed, the heart is opened, the blood flows out into the breast and belly cavities and is scooped up in the palms of the hands which are held together. The chest is scored with the corner of the Ulo on the inside across the middle line of the ribs and is there broken. Then both sides are loosened along the backbone and the four flat pieces are now cut up into smaller pieces with two or three ribs in each, according to the size of the animal. Each "piece" is a share, but that is no hindrance to having more than one helping at a meal. The hindpaws are cut off like the forepaws; the pubic symphysis is cut through and the rectum and urethra are taken out. The pelvis is cut into "pieces," the back pieces having the kidneys attached, and the limbs are likewise cut up. When the back is divided up to the neck, the gullet and the windpipe are removed; also the head is flayed out, all but a tiny shred about the nostrils and whiskers. At last the masticatory muscles are cut through and the lower jaw broken off.

Intestines, stomach, blood and lungs are removed at once; the liver, as well as the numerous "pieces" of meat are left on the blubber till the quartering is completed. The woman keeps standing on her feet at the same side of the animal during the entire performance.

When thus in the course of 15—20 minutes the intestines and the blood of the seal have been taken out, and the flesh divided and removed, as well as the head and paws, the skin with the blubber attached is still left. Now the woman takes an edge of the skin between her front teeth, and the Ulo is forced down with its entire cutting edge, between blubber and skin while the left hand, with

parted fingers, follows on the hairy side, and there ensures that the skin touches the entire blade of the knife, and yet prevents the pointed corners of the blade being caught in the skin and cutting holes in it. By a few peeling strokes from the edges towards the centre the blubber is loosened and then lies in one lump on the skin. Both skin and blubber are removed, and there is a wet spot on the floor, where the skin has been, but neither blood nor grease-spots.[1] The woman's hands are blood-stained and greasy to the middle of her forearm, but her garments and her boots are unstained.

During this performance the Ulo has executed a series of different movements and fulfilled many functions, viz. cutting movements, by pulling backwards and forwards, where sometimes the middle of the curve, sometimes half the edge, sometimes only the part next to the point has worked; scoring movements over the bones and ligaments, which later on have to be broken or torn; the making of holes in muscles or blubber in order to provide a grip for the left hand; and peeling movements, where the entire edge is forced through; but never rocking and forcing movements such as those made by the curved knife in a European kitchen. All these movements and functions depend upon the following facts: — that the handle gives a firm and secure grip, even when it is besmeared with blood and grease; that its length is equal to the width of the hand; that the cutting edge is sharp; and that its length slightly exceeds that of the handle, to allow freedom for the hand and a space between the handle and the cutting edge; and yet not so large a space that it prevents the Ulo from being turned in a narrow place, for instance in the inside of the animal. Only when the blade is fixed to the handle by a single slender stem, can the pliability of the wrist be fully utilized. During the removal of the blubber the blade must if possible lie level with the skin, therefore it is preferable for the stem to be in one piece with the blade and not riveted to it; in addition to this the blade must have a certain width between its curve and the stem, so as to produce an adequate surface for the use of the left hand.

When later on the skin is being prepared for clothing, the Ulo is used to scrape off the last remnants of fat. The upper edge of the skin is held with the left hand, the lower with the foot. For this

[1] If, however, the heart was damaged during the capture, all the blood collects in the thoracic cavity, and then it may be rather difficult to prevent some of it from trickling out upon the floor.

purpose the cutting edge of the Ulo must be blunt as the blade is pressed with force against the skin, and forms a considerably larger angle with it than during the removal of the blubber. For this purpose a special implement is often used, which may resemble an old-fashioned Ulo, *kiliortût*, 177, (see Fig. 47, F.), but the blade is less curved and no attempt has been made to obtain a particularly slender stem, or else the handle is fixed directly to the blade without a stem, which is of little importance here. Moreover, when the blade is of metal it has a slightly concave surface, to receive the fat which is scraped off (*mame*, 200) and which is eaten as a kind of delicacy. Therefore, a suitably large and strong mussel-shell makes the most natural scraper, and is used even at the present day whenever nothing better is obtainable.

When the skin is washed the same implements are used, a blunt Ulo or a scraper on the hairy side of the skin, in order, by the same movements, to squeeze water and dirt out of the fur. For this also a special implement is sometimes used, generally made of bone, shaped like a long, slightly curved knife with a handle which is a prolongation of the blade.

When the prepared skins are to be cut out for sewing, the sharp Ulo is again used, and the skin is cut against a firm foundation of wood or bone, the curved side of the edge being drawn along the skin. If particularly accurate and small pieces have to be cut out, as for example for skin embroidery, the points of the Ulo are used, or the blade is supported at the upper edge by the point of the third finger, which is just able to reach it. When pieces of furry skin are going to be joined together, care has to be taken that the fur lies naturally, and as all the hairs on the seal are bent from the fore-end backwards, the fur must not be damaged at the edges because in the finished garments the hairs must everywhere be bent downwards so that water and dirt may run off easily. If the skin has been cut carefully the hair-layers will be continued over the seams of the skin-pieces. The skin is therefore cut from the fleshy side and the woman cuts in a sitting posture, keeping the one end of the skin fixed between her abdomen and thigh, the other between the fingers of her left hand, so that the part of the skin which she cuts, is spread out over the palm of her left hand.

For European materials — cloth — a pair of scissors is always used, and never the Ulo.

We shall now consider a series of typical forms of the Ulo (Figs. 45 and 46). With the exception of Nos. 1 and 3 all are chosen from Mason's monograph, and the illustrations are all ob-

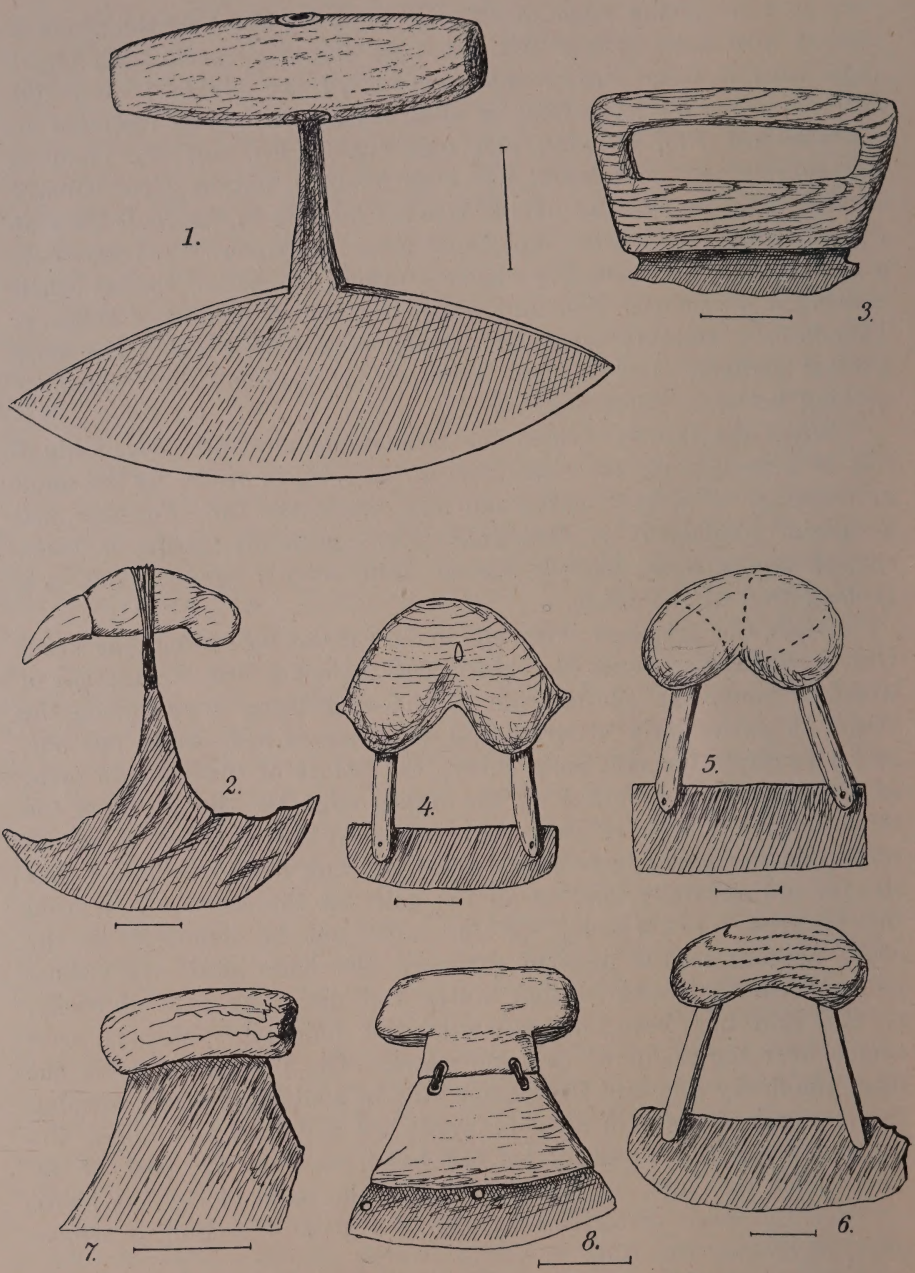


Fig. 45. Typical forms of Ulos or Woman's Knives.
1, West Greenland, European workmanship, original; 2—6, East Greenland, after G. HOLM; 7—8, from various Eskimo tribes, selected from the figures in O. T. MASON's Monograph. — In all the figures the scale is one inch.

Fig. 46. Typical forms of Ulos or Woman's Knives.
9—21, From various Eskimo tribes, selected from the figures in O. T. Mason's Monograph. — In all the figures the scale is one inch.

tained by tracing the outlines of MASON's forms, after which they were reduced in the process of reproduction. In all the figures the subjoined scale denotes a length of one inch.

Fig. 45, *1* is the definite ideal form, as it appears everywhere, wherever regular trade with the Eskimo is carried on. The blade is broad lanceolate or has the shape of a double segment of a circle and is in one piece with the stem, which is made as slender as possible near the handle. The handle is made of wood or bone; it is barrel-shaped, and almost cylindrical, but somewhat flattened in vertical direction. The length of the handle is rather less than that of the blade, and is adapted to the width of the hand; the length of the stem is such, that the third finger can reach down and press upon the upper edge of the blade, while the rest of the hand grips the handle.

Made in Denmark to sell in the shops in Greenland.

Fig. 45, *2*. Similar in form to the preceding. Bought on the west coast by the East Greenlanders, before the colonisation, and altered, part of the upper edge being removed to procure material for the making of needles. East Greenland, Angmagsalik. After G. HOLM.

Fig. 45, *3*. East Greenland, Angmagsalik. After G. HOLM. The handle is of wood, and the blade of stone. The same shape is found in Alaska and southwards.

Fig. 45, *4—6*. East Greenland, Angmagsalik. After G. HOLM. The blade (*4—5* of hoop-iron and *6* of stone) is fastened to the handle by two stems.With the exception that the blade is of inferior make, this form is the one which, next to the ideal form, permits greatest freedom of movement.

Fig. 45, *7*. Blade of sheet iron fastened to an ivory handle; primitive form. West Greenland, Upernivik.

Fig. 45, *8*. North Greenland, Smith Sound. Blade of hoop-iron fastened to a bone handle. Notice how the shape of the handle causes a space to be left between the grip and the blade.

Fig. 46, *9*. West Greenland, Upernivik. Older form of European workmanship, less finished than the ideal form. As the upper edge of the blade is straight, the blade soon becomes, by wear, too narrow and short for handy use.

Fig. 46, *10—11*. Central Eskimo, Cumberland Sound. Forms similar to the preceding, but the stem is rivetted to the blade; much worn.

Fig. 46, *12*, *13*. Central Eskimo, Belly Bay and Ingloolik. More or less successful attempts to approach the ideal form. The blades are of stone and sheet iron. Native workmanship.

Fig. 46, *14*. Mackenzie Eskimo, Anderson River. The blade is

of sheet iron, rivetted to two stems. Notice the shortness of the stems here caused by the relatively great height of the blade.

Fig. 46, *15*, *16*. North Alaska, Point Barrow. Primitive types. Blades of hornstone and slate.

Fig. 46, *17*. West Alaska, Kotzebue Sound. Primitive type. Blade quadrant-shaped and of sheet iron.

Fig. 46, *18—19*. West Alaska, St. Michaels. One a primitive form with slate blade; the other a more modern form with iron blade. Both rather small.

Fig. 46, *20*. South Alaska, Kadiak. Primitive form with stone blade.

Fig, 46, *21*. Thlinkit Indians, Fort Wrangel, Alaska. The blade is of iron, forged into two points which are driven into a piece of wood, a method which differs remarkably from those of the Eskimo; it could not have been made by an Eskimo, because the only fire at the maker's disposal was the flame from a seal-oil lamp. The form obtained is however nearly the same as regards fitness for use.

All the forms figured here, can, together with all the others illustrated by MASON and other authors be comprised within a few types connected by very easy transitional stages: —

A. The primitive type; the blade sector- or quadrant-shaped,[1] frequently of stone, rarely of sheet-iron; fastened by various means in the centre of the sector to a piece of wood or bone. Examples Fig. 45, *7* and Fig. 46, *15*, *17*, *19* and *20*.

B. The blade ordinarily in form of a segment of a circle; sometimes nearly straight. Of stone or hoop-iron either first put into a backing of bone to give it firmness, or fastened with two stems direct to the handle. Examples Fig. 45, *3*, *4—6*, Fig. 46, *14*, *18*, *21*.

C. The last and best developed form, the blade frequently of iron, fastened with a single stem to the handle. As soon as the material permits, i. e. as soon as it is made of steel, stem and blade are of one piece, and the blade attains the final, ideal, broad lanceolate type. Examples Fig. 45, *1* and *2* and Fig. 46, *9—13*.

We may perhaps regard as a fourth type, an implement which MASON has included among his Ulos (Pl. LIX, 1; LXIV, 4. etc.): the

[1] The form which most frequently occurs on splitting flint or flint-like stones.

blade is cresent-shaped, of stone or more rarely of metal, fastened to a backing of wood or bone which is prolonged at the back to form a handle. This handle is often decorated with carvings. This form is evidently frequent in Alaska, but it is also found at the other extremity: in West Greenland and at Angmagsalik. I am by no means certain of its really being an Ulo; and in West Greenland it is a frequently occurring form of a kind of scraper used to soften skin. These scrapers are sometimes, even today, made with stone blades (*tasitsaut* of *tasîpâ*, 359); should not be confused with the *kiliortût*, see p. 207). At Angmagsalik it was, according to HOLM,

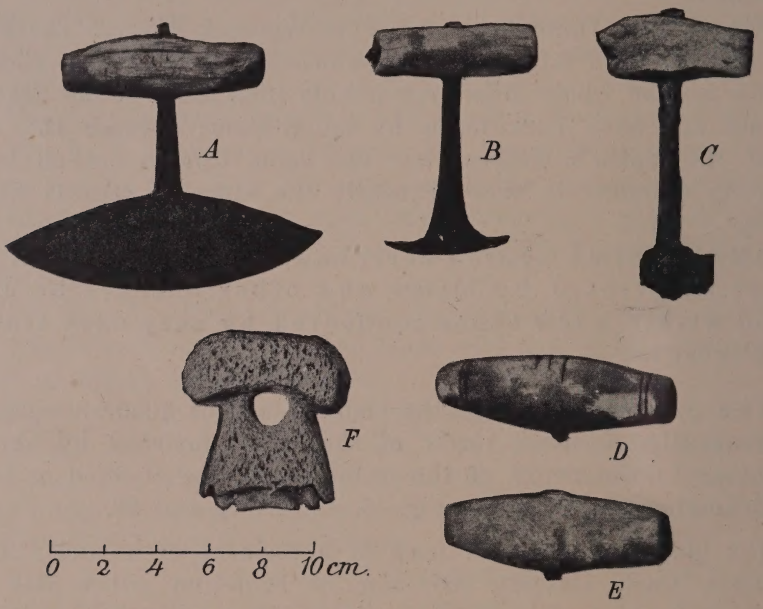


Fig. 47. *A*, *B*, *C*, *D* and *E* Ulos and handles of Ulos; *F* handle of a skin scraper.

a whetstone. But if it is really sharpened like an Ulo it must of course serve for all kinds of work in connection with the cutting out of skin, but then it cannot be of such universal use as the real Ulo, especially for the cutting and quartering of marine animals.

All these types are however found everywhere, among all Eskimo tribes, and have therefore no geographical, that is to say no regional, significance, but only a technological one. They are entirely dependent on the supply of suitable materials and tools available at the place and time.

Fig. 47, *A* is an Ulo of European manufacture, dropped or forgotten on an old site of a house near Skansen on Disco.

Fig. 47, *B* and *C* are old Ulos from Hunde Eiland, *B* is almost worn out; *C*, nearly eaten away by rust.

Fig. 47, *D*, Handle of Ulo (*kimagtût*, 178) of European manufacture. Hunde Eiland.

Fig. 47, *E* is another specimen from Sarqaq, made from the bone of a Caribou.

Various Tools, especially for Skin dressing.

Fig. 47, *F* is the handle of whale's bone of a skin scraper. (*kiliortût*, 177). The blade was of stone and was fitted into a groove by a lashing of sinew thread. At the back countersunk grooves proceed from the hole. Kronprinsens Eiland.

Fig. 48, *A* is a diminutive boot-stretcher (*kangmiut*, 166) of whale's bone, formed like a boot or rather like the conventional shape of a *tigussaut* (see below). It is intended for use when travelling, as for instance, when Caribou-hunting, when a large boot-stretcher of regular size would be cumbersome to carry. The tooth of a seal is tied by a piece of sinew thread to the boot-stretcher; it has been in use as *putugkisit* (see below) during necessary repairs to the boots. The boot-sole, after it has been dried, is daily moulded along its edge over the edge of the boot-stretcher.

As a couple of indispensable little tools for boot-sewing may here be mentioned — the sole-pucker (*tigussaut*, 363) and the loop-awl (*putugkisit* of *putuaq*, the loop on the edge of the boot-sole, through which the boot-lace is put, 303). The sole of a Greenland boot is formed like a barge, where the sides are so high, that wearing away of the seam, where it is joined to the upper-leather, is impossible. At the sides it is simply bent upwards, but in order to make it rise at the heel, and bend upwards and backwards at the toe, the edge has to be gathered into innumerable fine folds. Only a woman skilful in needle-work can perform this task so cleverly, that the boot in that place, becomes perfectly tight. These puckers are gathered with a *tigussaut*, which generally is made of the tusk of a walrus or of a sharpened and finely ground and polished stone. Fig. 48, *B*, *D*, *F* and *G* show some forms made of ivory; form *F* is especially common here. But as a rule, the form of the implement is rather immaterial; if the tool is too small, the fingers get too tired; and if it is too large, the woman has difficulty in seeing what she is doing. Only the edge is of importance; it must be absolutely flawless; it must not be able to cut, and yet be somewhat sharp. Hard varieties of bone are therefore preferable to metal. If the tool becomes blunt, it is sharpened on a fine-grained whetstone.

B. Tusk of walrus. Disco Fjord. In the ruins of a house.

D. Tusk of walrus. Sarqaq. Grave.

F. Whale's bone, has had the form of a boot, but the foot has disappeared by repeated sharpenings. Found in a ruin at Disco Fjord and again taken into use.

G. A thin lamella of the tusk of a walrus sharpened at the one end. By means of the different capacities of absorbing heated oil

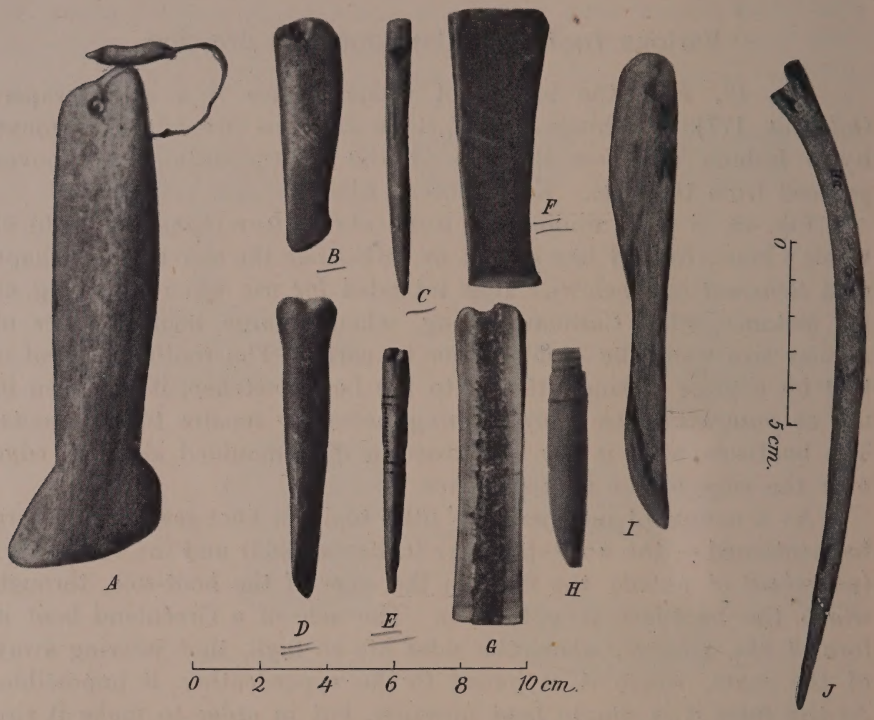


Fig. 48. *A*, Diminutive boot-stretcher for use when travelling; *B*—*G*, sole-puckers and loop-awls; *H*, case for sewing-needles of European origin; *I*, an *erisaut*, bone knife for removing hairs from hides; *J*, needle for stringing fish.

possessed by the different ivory-substances a kind of ornamentation has been formed. Disco Fjord. Modern.

Before the sole is sewn on to men's boots a couple of loops are made on the side of them at about the base of the toes. The pointed corner of the Ulo is put through, a little distance from the edge, and the hole thus produced is now, by the aid of a bone-bodkin, *putugkisit*, widened to a suitable size, after which the sole is sewn on below the loop. As the latter must be able to stand a strong pull from the boot-lace, the hole must not be cut full size, but just forced by the bodkin, to prevent cracks beginning to form. Another

danger which should be avoided, is that the sole may let in water at this spot. As these two implements are always used for the same kind of work, and not for anything else, they are generally fastened together. Thus *B* and *C*, and *D* and *E* are two sets of these implements. *E* is ornamented with rows of small holes. Both sets are made of the tusks of a walrus.

As the way in which the sole of the boot is made, is alike in all Eskimo tribes,[1] these implements will also be found in other places, at any rate the *tigussaut*. I do not know whether they have been expressly mentioned; I have not been able to find any such mention in the literature accessible to me here, but sometimes there are figures of such implements, which have been — evidently wrongly — interpreted to be something else. Thus Boas has illustrated in his figures 41, 42 and 134, a number of implements which he calls "skin-scrapers", some of which undoubtedly are sole-puckers. While the edge of a scraper as a rule is sharpened on the one side only, unless the whole blade is curved, the edge of a *tigussaut* is sharpened alike on both sides. Several of Boas's specimens would also be too small for scrapers. A number are provided with a handle in such a manner that by its shape it can be seen, that the edge is to be held lengthwise, not crosswise. The "awls" and "marlinespikes" figured by several authors are exactly similar to the Greenland *putugkisit*.

H is a needlecase (*merqusivik*, 207) of wood for steel needles. The stopper has been made to screw on. It is perhaps of European workmanship. Sarqaq.

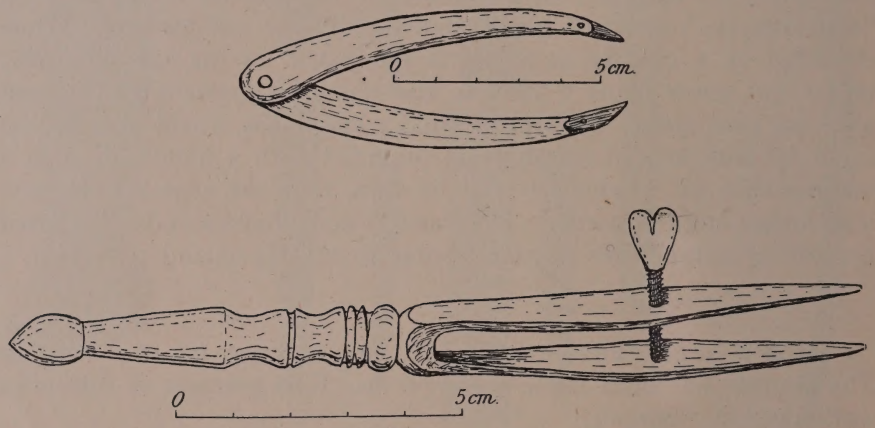
I is a bone knife (*erisaut*) for plucking the hairs from those sealskins which are to be made into waterproof leather (*erisâq*, 68). Now such a tool is doubtless out of date; any knife not too sharp, is now used for that purpose. Sarqaq.

J is a bone needle (*nuissaut*, 256) for stringing fish. Disco Fjord.

The national skin-embroidery of West Greenland, which is worked to regular patterns by sewing tiny square bits of coloured skin on

[1] See, e. g. the excellent figures in Mason: Primitive Travel and Transportation.

a dyed skin from which the hair has been removed has, since the colonisation of the country, been developed to great perfection. Civilization has introduced finer needles and thread, more freedom in the choice of colours, and has, perhaps, also sometimes unconsciously influenced artistic taste; each needle-woman indeed composes her own pattern, and chooses her own colours, but besides the embroidery which is made for the trimming of women's trousers and boots, for ornamentation on mittens or on young men's Sunday-boots, and the like, a great quantity is made for sale — not as a regular trade, but only in the form of fancy articles — for the Europeans in the country; and these latter, for instance, by constantly choosing the tasteful and discarding the ugly, have doubtless been instrumental



Figs. 49 and 50. Two forms of dividers for the accurate marking out of the pattern in skin embroideries.

in raising this art to a higher standard. In order to make these patterns regularly and accurately, a kind of compasses (*avdláutartut*, Supplement, 10) are used at the sewing on of certain bits in the pattern, while the intervening bits are afterwards sewn on according to judgment. Fig. 49 shows the most common form, a pair of curved compass-legs of bone with brass points. Fig. 50 is a later, not quite successful model, the idea is derived from a European spring bow-dividers; a common wood-screw moves the legs apart, while their elasticity will draw them in, when the screw is turned back. Tusk of walrus. Hunde Eiland.

The art of embroidery cannot be practised by everybody, but is on the point of becoming a specialized occupation. This art is carried on all over Danish West Greenland, but attains its highest perfection in the districts of Holstenborg and Sukkertoppen.

Fig. 51 shows a box, turned in wood, of European workmanship. It contains some glass beads, a brass clasp, and a pair of ear-

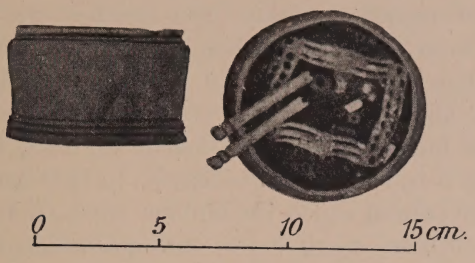


Fig. 51. Grave-find; a turned box with screw lid, containing glass beads, brass clasps and tin ear-pendants.

pendants of tin; the latter are made here. The rest are imported, before the Danish colonisation of the country, most likely by Dutch Whalers. Found in a woman's grave at Sarqaq.

Lamps for burning blubber oil.

The most important household article of the Eskimo is the lamp for burning blubber oil. Without that, he would not be able to live the life of the districts north of the forest-limit, or to endure the cold of the Polar winter, and its long period of darkness. The object of the lamp is to burn oil, obtained from blubber, by the aid of a wick of moss, and by this combustion to illuminate and heat the house or tent, to cook the meat and dry the clothes. As a makeshift any tolerably fireproof, slightly excavated piece of stone, etc. can be used, but soapstone (*uvkussigsaq*, material for a *uvkusik*, a pot, 405) is particularly in demand, because it is absolutely fireproof, tough and easily worked. Soapstone is also used for pots, and it was therefore a necessity to the Eskimo so much so indeed that he sometimes made journeys which lasted years, in order to obtain it.

Moreover, even where soapstone is plentiful, the Eskimo cannot with his primitive tools, secure the pieces suitable to his purpose: He must try to loosen the pieces that project among the harder rocks. They are nearly always oblong, and as the largest and best pieces are used for pots, these are consequently always oblong, very often rectangular. Such a pot is most economically heated by a straight flame, if that is possible, under the middle of the bottom. Therefore attempts are made to shape the lamp so, that the side intended for the wick, is straight. Moreover it is convenient, to have

a spacious cavity, that it may contain plenty of blubber in the process of thawing and melting — for when the lamp is once started, the blubber must gradually melt itself to oil, as required. On the other hand, in a capacious lamp, the blubber can — if necessary — be removed from the flame, when the melting process is to be diminished. A lamp for heating and cooking purposes must therefore be flat, big, and with one side straight and one curved.

The material may often be insufficient for this, but then it may perhaps allow the reservoir to be deepened. In that case it is often provided with a ridge behind which the blubber can be placed. The ridge is pierced by one or more small holes, through which the oil flows into the space containing the wick. The ridge, in addition, increases the durability of the lamp. Such lamps are often elliptical or quite round.

In Arctic regions proper, train-oil is the only fuel, and there the lamps are large; where other fuel — heather, wood, peat or coal — is available, either the whole year round or only in the summer, the lamp used for burning blubber oil loses its importance as a heater, and is used solely for illuminating purposes. For this, small specimens may suffice. But a surplus of light and heat is inevitably connected with the Eskimo idea of luxury; therefore big lamps are also found in such regions. Even by the colonial Greenlanders of our own time a surplus of light and heat is considered necessary for birthdays, Christmas and other festivals: the more stearin candles are lighted the better. Conversely, small and rudely made lamps for burning blubber oil are found also in the regions of the Far North. The reason for this may either be lack of material, or these lamps may be intended for some particular purpose — for use on journeys or for illuminating the entrance or corners inside the house.

As soapstone is generally soft, free from nodules, and easily worked the quality of the tools has but slight influence on the form of the lamps. Of course the work is more finely finished when iron tools are available, but there is no essential difference between such lamps and those made with drill and stone-knives.

In the straight side intended for the wick, there is usually a small ledge for the support of the wick, so that it is easier to keep its tip at a fixed level. In West Greenland there are still a number of old stone lamps in use, but I have never seen a moss-wick; for this there is now always substituted a strip of linen, even in the poorest dwellings. As the linen wick can easily absorb the train-oil from the bottom of a deep lamp, the ledge mentioned above becomes a drawback and is therefore removed.

But neither in the one, nor in the other form is the soapstone lamp the ideal utensil, and even although many of them are still in use here, new ones are probably rare. As soon as it can be afforded, the stone lamp is replaced by a flat square metal basin from the

shop. At the bottom of this small slices of blubber are placed at suitable distances. It burns a linen wick which is fixed at the one edge with pincers. But soapstone pots, on the other hand, have a real advantage over those made of cast iron; not only do they retain the heat a longer time, but the opinion is, that meat cooked in them tasts better.

Formerly, the blubber-oil lamp was the private property of the housewife, and there were at least as many lamps in a dwelling as there were housewives. Lamps are therefore found in women's graves together with their other personal belongings. They have no special religious significance, for instance, as "votive-lamps."

The Eskimo lamp for burning blubber oil has, on the basis of the rich collection found in the Washington Museum, been monographically treated in an excellent work by H. HOUGH. There, about a hundred different lamps, from all possible Eskimo regions have been described and illustrated. First-hand information from travellers and collectors is carefully recorded. As regards the general results, more attention has been paid to technological conditions than is usually the case, but they are not placed in the foreground, as has been done here. The author has so far tried to explain the adaptation of the forms to climatic conditions, as he maintains that big lamps are used in High Arctic regions, and small ones in more southern regions; but he seems, at the same time, to think it possible, that certain forms might have regional significance even if it is not possible to explain their regional occurrence from definite local conditions. It is probably because of this underlying thought that on the last plate, he illustrates 14 different typical outlines arranged geographically according to the Eskimo tribes. There is, however, in these typical forms, not a single one, with the exception of the form from St. Lawrence, which might not just as well be from West Greenland. On St. Lawrence Island and in Yukon Valley, soapstone and other suitable stone materials are absent, as HOUGH himself records, and the lamps are there made of clay. In this case therefore the form can be made according to desire and big forms occur which differ entirely from all others, with two or more edges for wicks, and therefore rectangular in outline. The forms from Kadiak and the Aleutian Islands, which are evenly rounded without a straight line for the wick, do not in reality differ from many small Greenland lamps. These lamps are principally intended for illuminating purposes, and not for giving heat under an oblong pot, therefore it is not necessary, that the wick should stand in a straight line.

It is a very interesting fact, pointed out by HOUGH, that in America the Eskimo are the only primitive people who are acquainted with lamps, whereas lamps are well known all over Asia and Europe. He says (p. 1039) "that the Eskimo before he migrated from his

priscan home had the lamp, this utensil being a prerequisite to migration into high latitude"; and on the following page: "That the invention of the lamp took place on some seacoast, where fat of aquatic mammals of high fuel value was abundant, rather than in the interior, where the fat of land animals is of little value". The last sentence is undoubtedly correct, but I do not see why the idea of the lamp could not have originated on the coast of the Arctic ocean, as has that of all the other utensils, and why it should necessarily have been brought from "a priscan home."

There are lamps for burning blubber oil, which are very small in size, but which may be used all the same; they are playthings for

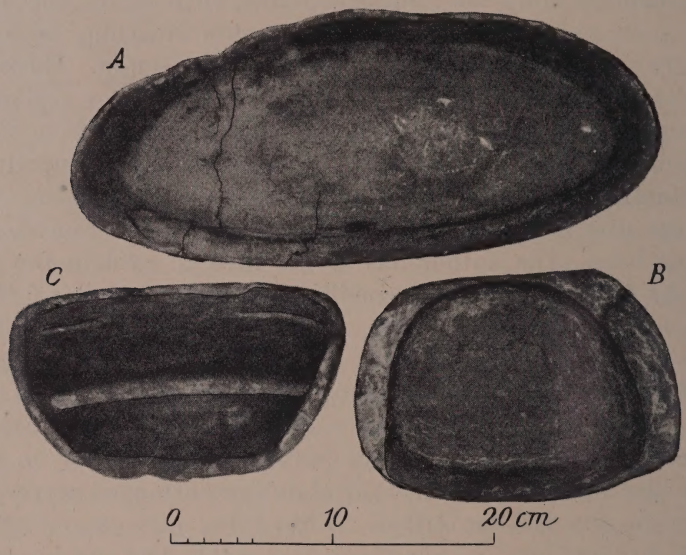


Fig. 52. Three typical soapstone lamps. For further particulars see text.

little girls, and formerly they were placed in the graves together with the other belongings of the child. Even very tiny soapstone lamps, stand and all are found, which represent, not the little girl's, but her doll's lamp.

On the east coast of Disco there is an old settlement *Qutdligssat*, "those things which can be used for lamps." It derives its name from a basalt which is here split, so that frequently slightly hollowed pieces are obtained which can be used for lamps.

Fig. 52, *A* is a large flat lamp, (*qutdleq*, 160) made with iron tools. The edge for the wick is slightly curved. The lamp being big and flat, there is no particular ledge for the wick, nor are there any ridges. The lamp has been broken in several places and has been lashed together again with string of hempen yarn, passed through holes. Ujarassugssuk at Vajgattet.

Fig. 52, *B* is a smaller lamp, rather flat inside, not at all shaped

outside, and without any particular edge for the wick. It is very thick in substance, and a piece is sawn off from the back for use as a sinker for a fish-hook. Same locality as above.

Fig. 52, *C* is short, but deep; therefore it is provided both with a ridge which is pierced by a hole at the bottom, and also with a ledge for the wick in the longest side. The ledge has been afterwards removed from the middle of the long side, when the importance of the lamp — after a stove had been procured — was reduced, and its sole purpose was that of illumination; the moss wick was then replaced by a linen one. As the ridge strengthens the lamp, the walls are rather thin. Godhavn.

Various Household Articles.

Fig. 53 shows a couple of wick-trimmers (*tarqigssût*, 359) used for putting the wicks of the Eskimo soapstone lamp in order, so that

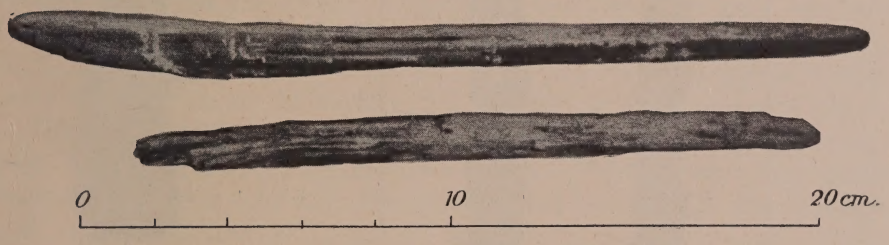


Fig. 53. Two wick-trimmers of asbestos.

they may burn properly. Some stick or other is usually used for one of these wick-trimmers and as it is always saturated with oil it is easily lighted and may be used provisionally as a taper (*naneruaq*, 231). Sticks of asbestos (*quvdlugaq*, 158) are in special demand on account of their durability, but they can be had in only a few places, so they are highly valued and often handed down through several generations, as also are good soapstone lamps. The asbestos trimmers illustrated here are from the settlement of Ivnalik in the district of Egedesminde.

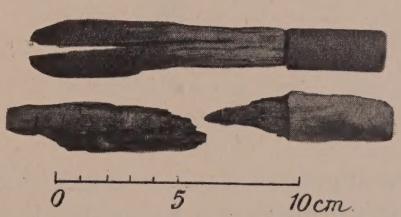


Fig. 54. Ancient fire-drills.

Wick trimmers of asbestos are also used by the Central Eskimo, as mentioned even by Parry (see p. 51). In the same place he records that the West Greenlanders use asbestos for the wicks, and cites Cranz as his authority. But this citation must be due to a misunderstanding, because Cranz (p. 75) writes: "Die gereinigten Fasern (vom Asbest) lassen sich auch als Docht in der Lampe brauchen. Man muss aber nicht denken, dass die Grönländer so sinnreich sind. Sie bedienen sich desselben blos in Thran eingetunkt,

anstatt eines Hölzgens, Licht auzuzünden, indem der Stein, solang er ölicht ist, brennt and doch nicht verbrennt; um den Docht in ihren Lampen in Ordnung zu halten."

Fig. 54 illustrates two pieces of wood which have been used for making fire by boring (*ingnangniut*, 81). One of them is especially

Fig. 55. Various hooks; as regards their use, see text.

well-preserved; it is much charred at the bottom; above this there is a constriction to receive the cord which puts it into motion; at the top it is capped with a piece of antler in which there is a small socket. In other forms, the top part was pointed and rotated in a socket in the piece of wood or bone which was held above it, but in this implement the overlying piece must have had a tang.

Both of them were found in old house ruins on Hunde Eiland.

Fig. 55, *A* is a meat-hook (*qatdlût* of *qatdlúpâ*, Supplement, 19)

used in the winter for hauling pieces of meat, out of the meat-pits. This made it possible to have only a very small opening at the top, through which no dog could enter, and which might be easily closed with a single stone. The handle is of wood; it has formerly been somewhat longer; along the one edge some notches have been cut to afford a better grip. The hook itself is of antler, carefully shaped into a point and sharpened along both edges. In order to strengthen it, a lashing of sinew thread has been passed through a hole in the handle and above the outer edge of the hook where there are a few notches. Fragments of the thread still adhere to the handle. Moreover, the hook is fitted into a slot and held in place with a bone nail.

Sarpaq. From an old meat-pit.

Similar implements are often called "blubber-hooks" by authors.

Fig. 55, *B* is a hook made from an antler. The stumps of a couple of divergent branches, and some notches along the edges, serve to give a grip to the hand. I have not been able to gain any information concerning the use of this implement. There is a hole at each of the two bends in the branch, and the holes are placed at the outer edge, so as not to weaken the strength of the bone, and there is also a hole midway in the handle. I think the hook may have been used for hauling large pieces of whale-blubber from the coast by several persons together. One would plant the hook in the blubber and pull at the handle, while the others would pull the lines or straps which would be passed through the three holes. When the strain came thus to act in the longitudinal direction of the hook, none of the holes in the implement would detract from its strength. It could not have been used as a meat hook like the preceding; it is too clumsy for that and the hook itself is too broad.

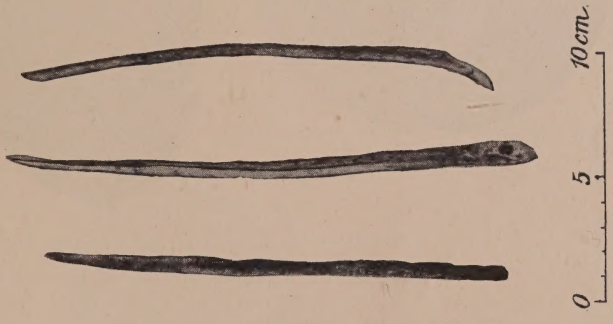


Fig. 56. Three marrow extractors.

Hunde Eiland. On the old site of a house.

Fig. 55, *C* is a *nigsíniut* (from *nigsípâ*, 247). No doubt it is either a less commonly used or else an improvised implement for hauling up sunken seals and White Whales from the bottom of the sea. It consists of a piece of whale's bone into which some large spikes have been driven, but the majority of these have been eaten away by rust. At the top there was a line-hole which has been broken by the strain. Kronprins Eiland.

Fig. 56 shows three marrow extractors (*patîaut* or *paterut*, 275); narrow semicylindrical pieces of antler, slightly hollowed at the one end. They have been frequently figured from other Eskimo tribes, but appear to have escaped attention in Greenland, though they were commonly used in districts where the Caribou live. I have seen old specimens near Godthaab. Usually they have had a hole in the one end, so as to be put on a string while travelling. This may perhaps result in their being mistaken for needles.

Disco Fjord, Hunde Eiland, Sarqaq.

Fig. 57 shows three meat dishes (*pûgutaq*, 301) each cut from a single piece of wood. A is rather large and heavy and has no bone

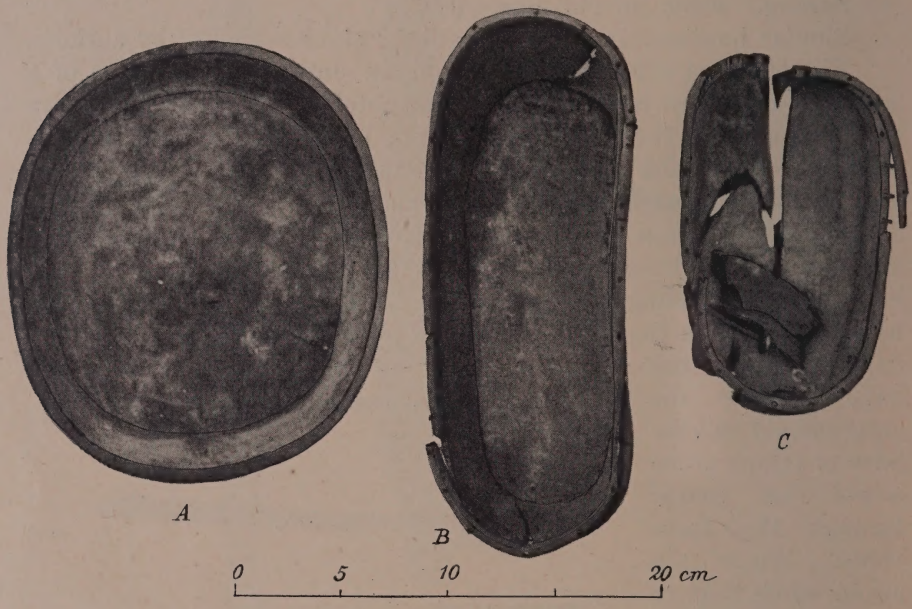


Fig. 57. Three wooden dishes for meat.

edgings, and does not appear to have been used long. It is however blackened by blood, soot and oil. Kronprins Eiland. From a grave. *B* and *C* are of smaller pieces of wood, and cut considerably thinner, therefore the upper edge is provided with beautifully made, bone mountings, riveted to the edge with bone nails. Sarqaq. Graves.

My collection contains in addition some tubs of coopers' work; among others, forms exactly similar to the type from East Greenland illustrated by THALBITZER in his Fig. 27; they are not well preserved, nor are they particularly characteristic, therefore they have not been figured.

Fig. 58, *A*—*D* are ladles for dispensing blood-soup (*qajûtaq*, 122); all are of wood and carefully made, especially *B*, which is not, however, well photographed. On *A*, *B* and *D* the short handle, by

itself, is sufficient to show that they are of native workmanship, on *B* and *D* the handle, moreover, forms a fairly sharp angle with the

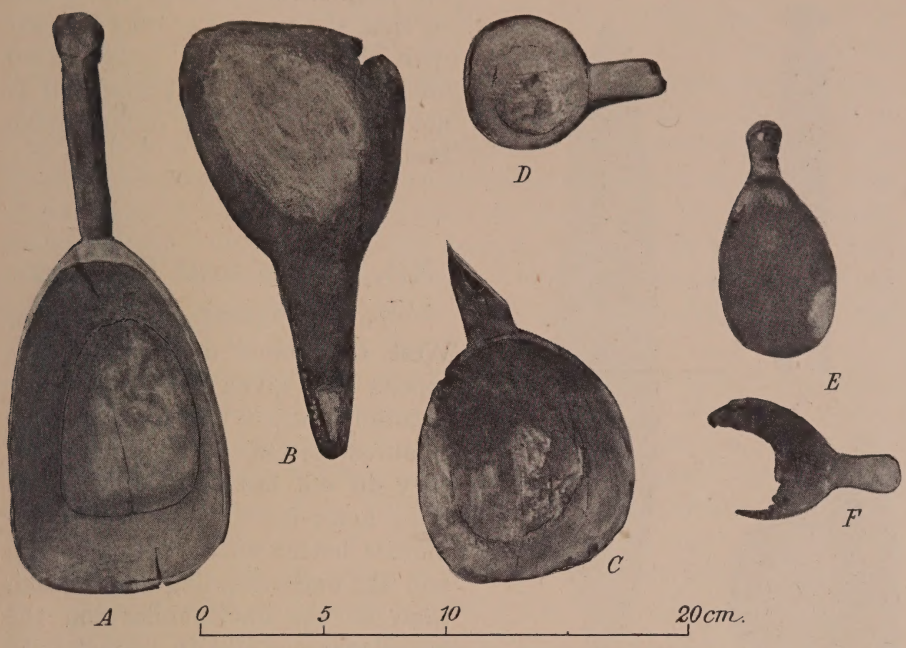


Fig. 58. Ladles and spoons of wood and bone.

bowl. *C* most resembles a European form, the handle was on a level with the bowl, but is broken, so that it cannot be seen how long it has been; as it appears to have been made of reddish coniferous wood (*Larix* sp.?), I think after all that it must have been made by a native.

Fig. 58, *A*, Sarqaq; grave. *B*, Kronprins Eiland; site of a house. *C* and *D*, Sarqaq.

Fig. 58, *E* and *F* are spoons for eating (*alugssaut*, 23). *E* is of bone (antler?); the handle has a hollow on the upper side for receiving the end of the thumb, and a hole through which is passed a cord for carrying it when travelling. Sarqaq; grave.

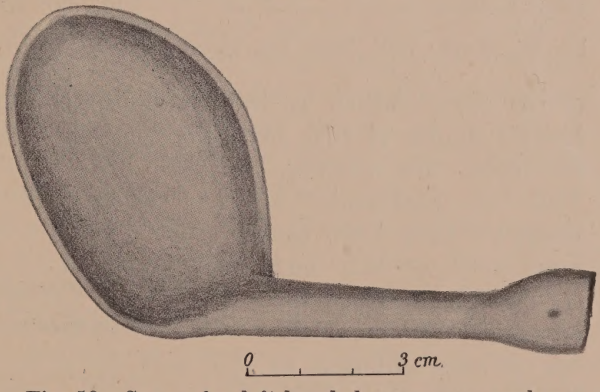


Fig. 59. Spoon for left-handed person or, perhaps a fish-ladle.

F is of wood, handsomely made, but badly preserved. The handle rises steeply. Hunde Eiland.

Fig. 59 is a rather rudely made spoon of bone from Hunde Eiland, peculiar in the fact that the handle is set at a sharp angle with the longitudinal axis of the bowl, so that the spoon can only be used with the left hand. There is no hole in the handle; perhaps it is not quite finished; or it may have been a fish-ladle.

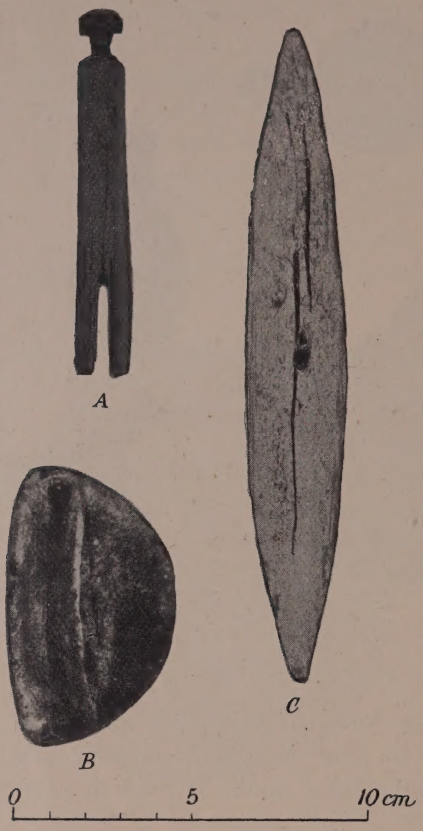


Fig. 60. Toys: Doll, lamp and kayak.

XII. Toys and Games.

Toys. Nowadays children in West Greenland often have European toys given to them. They naturally grasp at these odd, gaudily coloured objects with eagerness; but they do not last long. The more solid home-made toys which harmonize better with the imagination and the understanding of the child, than do the automobiles and the aeroplanes are still to be met with in the Eskimo homes and are often found in the graves of children of heathen parents.

The three specimens shown in Fig. 60 are all from graves. *A* is a female-doll — carved from a stick. It is peculiar on account of its form, which is the conventional one, well-known through HOLM's figures of toys from the east coast (e. g. Plates 28 and 38); the arms are wanting. That it represents a woman is seen from the huge knot of hair and the short legs. True, the latter feature offends the eye of the children of the present time, who now in drawings, indicate women by giving them unusually long legs. But ladies' fashions have changed in West Greenland since the beginning of the colonisation. Formerly, frocks worn by women reached to the knees: now, only to the hips. Disco Fjord.

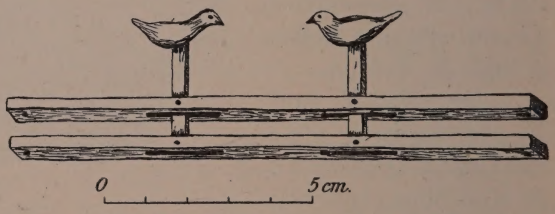


Fig. 61. Toy: Two pecking birds.

Fig. 60, *B* is a small soapstone lamp with ridges. Godhavn.

Fig. 60, *C* is a piece of wood carved as a kayak. North Disco.

The toy, figured by HOLM (Pl. 27) from Angmagsalik, which represents two small birds picking up grain, is well known here at Disco Bay. I have often seen them in Greenland homes; some better finished, others made more rudely. The one illustrated in Fig. 61 is not a very handsome specimen. It is carved from a whale's bone at Hunde Eiland, and was intended for a child who died; then it was sold to me. There are holes at the end of the rods through which strings were to have been passed, so that the figures — they always represent snow-buntings, such being well-known to Greenland children from rhymes and verses — could be moved without the child being able to see how this was done.

The game of *ajagarneq* appears to be widely spread among all the Eskimo tribes, and as far as I know, under the same name. HOLM found it at Angmagsalik; and it has several times been brought home, and the implement figured, from American tribes. POUL EGEDE records that he saw it in West Greenland homes which he visited as a child. The implement used for the game (*ajagaq*, 16) is in its principle everywhere the same: some object with perforations, attached to a pointed stick or to a bone staff by a cord. The stick is held in the hand, and the object is swung out, and has to be caught upon the stick by a stabbing or thrusting movement away from the player. This movement is designated by the indicative third person singular, *ajagpoq*, and this word is an old root-word from which a great number of verbs and nouns are derived (see KLEINSCHMIDT's dictionary).

Also in the workmanship of these *ajagaq* there are numerous points of resemblance. In West Greenland the *humerus* of a seal is used by preference, especially that of the hooded seal; or else the *humerus* of the dog, the cranium of a hare, or specially-fashioned pieces of wood or bone. From the Central Eskimo BOAS records sometimes "shoulder-bones of seal" (but his figure on p. 113 shows that it is a *humerus*) and sometimes a barrel-shaped piece of horn of the musk-ox with some holes at one end. HOLM's specimen from Angmagsalik resembles the latter. TURNER illustrates on p. 256 a specially fashioned piece of wood, the form of which somewhat resembles that of the specimens represented here in Fig. 62, *A* and *B*; and he mentions the cranium of a hare as used for this purpose. TURNER found the *ajagaq*, made on the same principle, among the Indians who, near Hudson Bay live close to the Eskimo, but with them the workmanship differed greatly from that of the Eskimo forms.

In Greenland the game is often a mere amusement or pastime for tedious hours, as for instance, during a journey, when weather-bound. But *ajagaq* is also used, or at any rate has been used, for playing

games in earnest. I have not been able to ascertain the exact rules for these, either because they are really forgotten or because the Eskimo do not like to explain them to me, certain indecencies being also represented in the form of some of the specimens.

The holes have different values; those which are most difficult to hit count the highest. Small stakes may be played for, e. g. matches, percussion caps, shot, etc. But when the passion for gambling seizes them, larger articles are staked, such as nets, lines, dogs, guns, kayaks, umiaqs, and even house and wife are said to be sometimes gambled away: indeed, at times, the passion for gambling takes such a grip of them, when they have anything to stake, that once the authorities were obliged to prohibit gambling with cards.

Fig. 62, *A* (also represented in *E* in another position and on a larger scale) is a very old and much worn *ajagaq*. The stick and the cord are new, made by the seller for demonstration. The *ajagaq* is of whale's bone and very carefully made. On the back are bored two obliquely-placed holes to attach the cord. On the front are five rows of obliquely-placed holes, which all turn upwards; the uppermost one penetrates entirely so that there the stick can pass through to a large hole in the oblique terminal face. In the lower end there is a large hole surrounded by a circle of small ones, and slightly above there is an oblong hole from which a groove leads obliquely upwards, and another

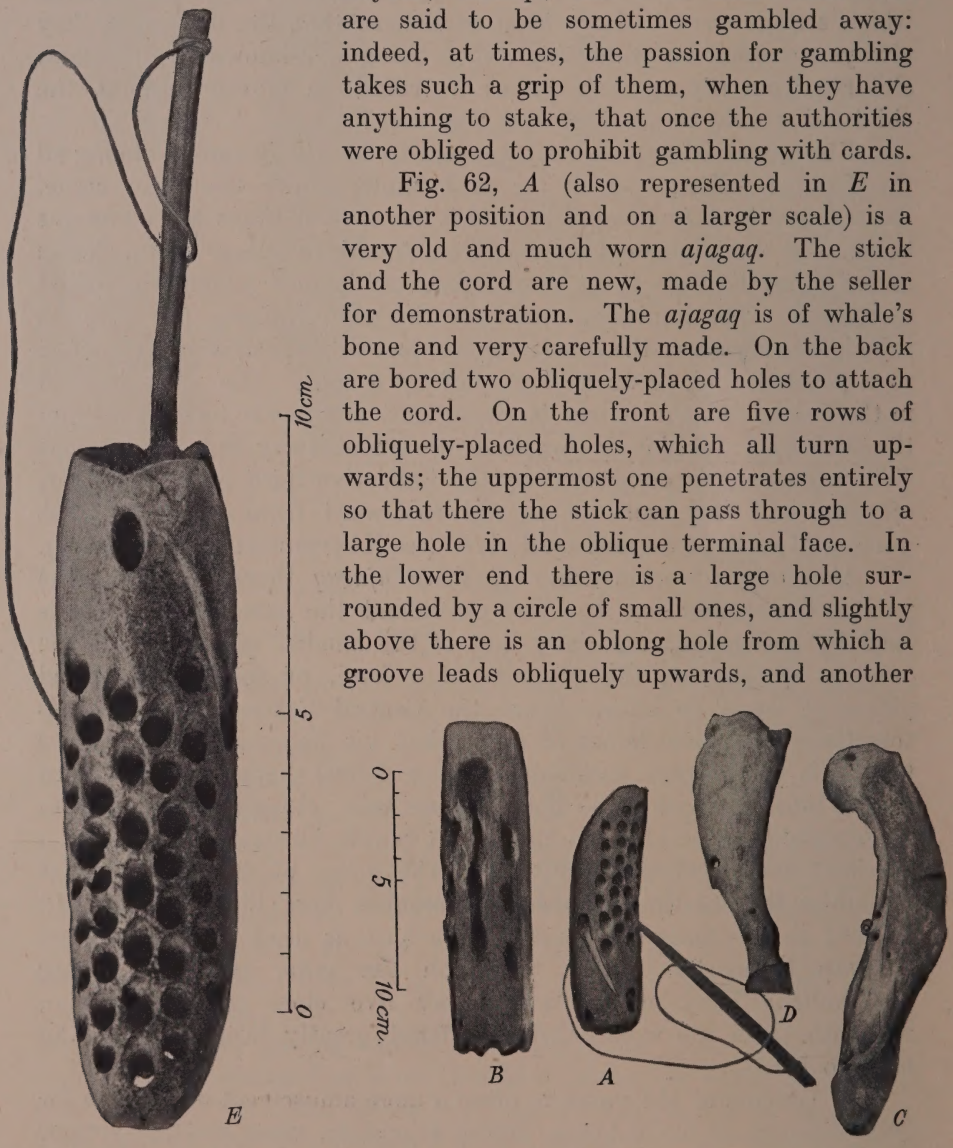


Fig. 62. *A*—*D*, Various specimens of *ajagaq*; *E* a larger representation of *A*.

similarly downwards. On the left side there is a hole which proceeds obliquely upwards, from which a deep steering groove leads downwards and forwards. Also from the other holes on the front side there are short downwardly-directed steering grooves.

Qeqertaq in the district of Ritenbenk.

Fig. 62, *B* is similar in form, but it is by no means so well made. The number of the holes on the front are seen on the figure. The uppermost one goes right through, and there is a hole in the upper oblique end. In the lower end there is a large hole surrounded by a circle of eight small ones. Here there is no lateral hole. This *ajagaq* is of wood and appears to have been made on some occasion when they wanted to play the game and had not an implement for it at hand. The holes are not bored, but are made partly by scraping out with a knife and partly by burning.

Hunde Eiland.

Fig. 62, *C* is the *humerus* of a hooded seal. The more awkward edges are removed, but even then it hits very hard upon the knuckles when one of the holes is not hit, as the bone is heavy. On the back are several pairs of holes for the reception of the cord; the situation of the latter has evidently been altered several times on account of the irregular form of the bone. Lastly, there has been inserted a small piece of bone with an eye which is fastened by a bone pin. Then several holes have been made at the ends and on the front besides the *foramen supracondylare* which has also been utilized. This *ajagaq* is also much worn and it was in use, like *A*, up to the time I obtained it. Yet it is very old, because in the upper end of the bone there are still remnants of the end of a weapon of bone and jasper.

Sarqaq at Vaigattet.

Fig. 64, *D* is a bone which has been fashioned into an *ajagaq* or to suit some purpose which I have not been able to determine. It does not appear to have been finished for the hole for the reception of the cord is so sharp at the edges that the cord would immediately be cut if it were used. In the upper end is a large hole; in the lower some holes with steering grooves; but here the bone is broken.

Hunde Eiland. On the old site of a house.

XIII. Various small articles and some implements of unknown use.

All fur-clad Polar people have to use some expedient or other to rid themselves of body-lice, especially when they become old and the arms become bent and stiff with rheumatism. Usually, for this purpose, a kind of rake is used, with which the insects are loosened, after

which they are caught in a small trap and removed. The louse-trap usually consists of a small piece of hare or bear skin fastened to two cords with which it may be passed under the clothes. The louse-rake or back-scratcher may have various forms. BOAS illustrates one (Fig. 66) from Hudson Bay which consists of a piece of whalebone the end of which is bent to a right angle and sharpened. My figure 63, *A* shows a more common form which I have seen figured elsewhere also, but I do not now remember where; it consists of a stick thrust through an oblong hole in a piece of oval-shaped, flat bone (antler), the edges of which are carefully sharpened. Into the end of the stick is inserted a wedge which is fastened with a bone nail. In the one direction the bone piece may somewhat alter the angle it forms with the handle. It is called *kúngut* (of *kumigpoq*, 192). Qeqertaq, in the district of Ritenbenk.

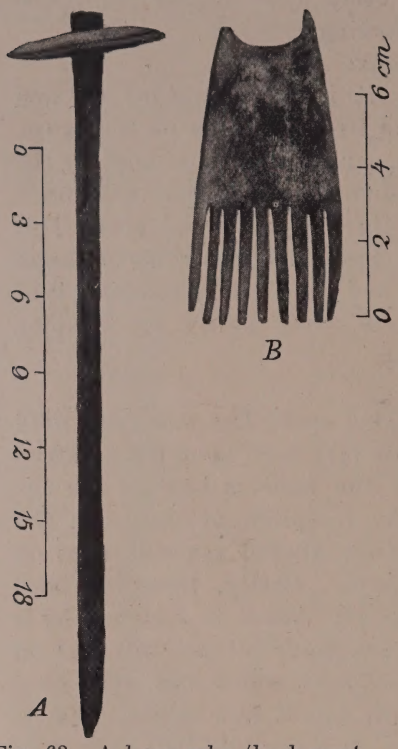


Fig. 63. A louse-rake (back-scratcher) and a comb.

Fig. 63, *B* is a comb (*igdlaigutit*, 84) made from the hard shell of a piece of antler. Sarqaq.

Fig. 64, *A* is a bone button in the form of a toggle, intended to be buttoned in a bone ring or a strap. *B* is a small piece of bone which has been fastened to the end of a line so that the line could easily be caught hold of, even with mittens on, when it should be loosened. Both are from Hunde Eiland.

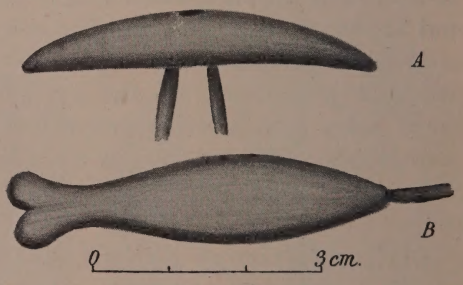


Fig. 64. A small bone toggle, and the fish-shaped butt of a line, worn on dress.

Fig. 65, *a* is a snuff-box (*sunôrsivik* ,346) made from a piece of walrus tusk and decorated with six rectangular figures in raised work. The bottom is of wood fastened with bone nails. The lid is also of wood capped with ivory. It is fastened with a couple of wooden pegs, which project so far out that they may easily be

pulled out with the teeth. At the top there is a hole, fitted with a wooden stopper, through which the pinch of snuff is obtained. It is said to be very old, but it was used till the owner died recently. Compared with South Greenland the custom of taking snuff has not been so prevalent here.

Hunde Eiland.

Figure 65, *b* is a tube of antler-bone with an attached semitubular projection in which are two holes. The tube is sharp at the edge and carefully fashioned both inside and outside. The projection is broken at the bottom. It has been used as the mouth-piece of a bag for bullets for a muzzle-loader.

Figure 65, *c* shows a couple of peculiar splints of whale's bone which were found near Godhavn, at intervals of two years. They are flat on the one side and grooved on the other. The pattern of the grooves differs. The work is done with primitive tools (pocket knives?) and has been very laborious. The splints are pieces of bone rings intended for Angekok drums. The hide should have been stretched over the ring in a wet condition and have been lashed in the hollows of the grooves. The splints do not appear to have been used; they probably broke while being bent.

Figure 65, *d* is a flat piece of whale's bone which somewhat resembles the steering "feather" of a harpoon shaft. It is however a shoe for the fore end of the keel of an umiaq, to be placed outside the skin and partly lashed and partly rivetted to it.

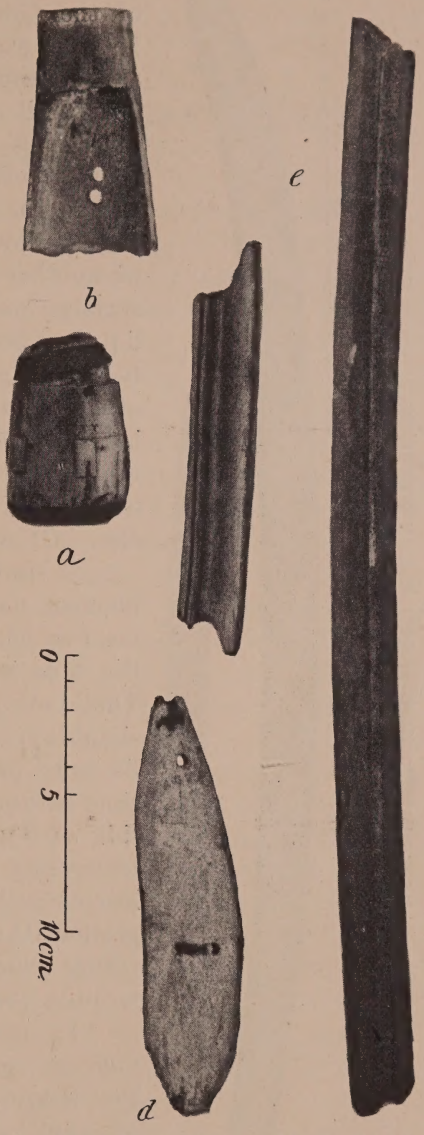


Fig. 65. *a*, Snuff box of walrus tusk with wooden lid and bottom; *b*, a bone ring with a broken semitubular projection still attached, serving as mouth-piece for a bullet-bag; *c*, two grooved splints of whale's bone intended for bone rings of Angekok-drums; *d*, a shoe of bone to be placed under the fore end of the keel of an umiaq.

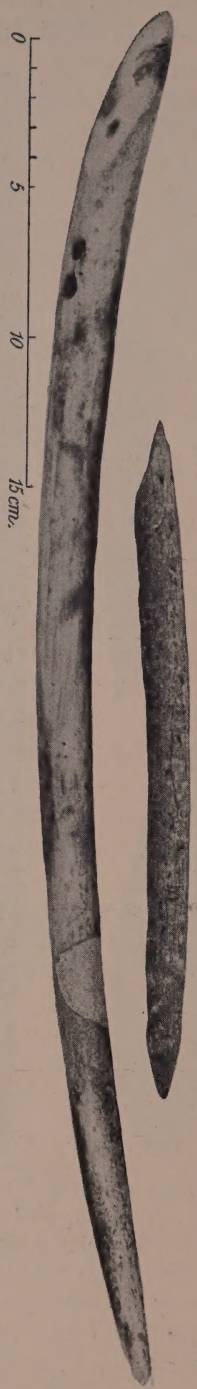


Fig. 66. A thick, pointed bone staff, and a fragment of another one perhaps similar to it, probably foreshafts for an *itsuartût*. For further particulars see text.

I have here given an illustration of a peculiar bone implement (see Fig. 66) which none of the Greenlanders hereabout exactly know. It is a slightly curved staff 65 cm. long, and almost circular in transverse section; at the bottom it is above 2 cm. thick and gradually diminishes in thickness upwards, but is not sharply pointed. The lower end is cut aslant, and in the centre of the oblique surface there is a hollow into which a short rounded tang of another piece could fit. Above the oblique surface, on the one side, are two holes obliquely bored so that they meet a little below the surface without weakening the piece of bone to any serious extent; the upper one is intended for the reception of a knot of rawhide-line, which should pass out of the lower hole and fasten the piece to something else. Of whale's bone. Hunde Eiland.

A similar but somewhat more slender implement has been illustrated by THALBITZER in his Fig. 53. Its lower end differs slightly, but the hole is constructed in the same manner. That both pieces are curved need not have any significance, because such a bone staff cannot lie upon the surface of the ground for a long time without becoming curved. On the concave side of THALBITZER's specimen are some small transverse grooves. If these have been made intentionally and are not produced by disintegration, then this implement undoubtedly differs rather widely from the one figured here which is quite round everywhere,

THALBITZER has — tentatively — identified his specimen as a "blubber-fork." But the Eskimo pots cannot contain large pieces of meat — for blubber in pots is out of the question — therefore such large forks are unnecessary. And then what is the good of the line? And cold blubber or meat is taken up with the bare hands, or with mittened hands, if it is too cold, or with a hook. If the piece is too large and too greasy to hold in the hand, only a rift need be cut in it

and a convenient handle is at once produced. At the suggestion of an old hunter from Disco Fjord I think that these bone staves have been used as foreshafts for an *itsuartût* (cf. p. 133).

XIV. On incorrect Models and faked Antiquities from West Greenland.

Along the entire west coast of Greenland a great number of models are made yearly, especially of kayaks with hunting implements, also of umiaqs, dog-sledges, and summer tents, and more rarely of winter dwellings. From the district of Godhavn at least 50 models of kayaks and about 25 models of sledges are manufactured yearly, and probably about the same number from other districts. They are sold partly to the resident Europeans, who send them to their friends as knick-knacks, souvenirs of Greenland, etc., partly to ship's crews or to travellers. Some are beautifully made and may be called models in so far as they exhibit such peculiarities as are known to everybody: the loosening of the harpoon from the shaft, and the place and shape of the outer visible objects in rude form. But in the majority of points they do not merit the name of models. Firstly, the proportions are always quite wrong: the harpoon and line, for instance, are far too large in relation to the rest; also, they are intentionally deceptive as regards a number of features in connection with construction: the throwing stick is as a rule rivetted to the shaft, the frame of the kayak is not constructed as it is in reality, but there are too few ribs, and the sledge-runners and cross-bars are made of finely polished lamellæ of bone (tusks of walrus), which of course they never are in reality. The making of models has become a domestic industry, an art, which must be learnt as any other art. A man who can make an excellent kayak for use could not make a saleable kayak-model unless he had learnt to do so.

The reason for this is, that if these models were made correctly they could not fetch a price which would in any way repay the work spent on them; on the other hand, with a little practice, money may be earned by making a conventional "model" which is saleable if it looks nice, even if it is entirely wrong as regards proportions and details. One of the cleverest makers of models and kayaks once agreed to make a correct model, but asked the same price for it as if it were a real kayak; when he delivered it, he declared that he would never make one again for that price.

Finally, these "models" find their way to museums, just where they ought not to be, as generally, with a few exceptions, they are devoid of all scientific value.

I have never heard that Danes in Greenland were offered faked antiquities. On the other hand, imitations, natural size, of old implements no longer in use are often offered for sale. But it is always by persons who are regarded by their countrymen as experts in "old objects", and not the least attempt is made to pretend that they are anything else than what they really are. But many stories are told about all the faked antiquities which a few years ago were sold — together with some genuine objects — to some foreign collectors who were both inexperienced as regards these objects and too eager in their demands.

Summary.

In the present work an attempt has been made to carry out a technological investigation of some of the most important Eskimo weapons and implements. By means of this method a basis has been formed for the classification of the missile weapons and for definitions of the different types and forms. At the same time it has been demonstrated that all the types of weapons may be derived from arrows and darts by adaptation and remodelling to the special use sometimes of the point and sometimes of the shaft with its accessories. This remodelling and evolution of the types may very well have taken place and been carried through within the Arctic area itself, so that there is no need to postulate any borrowing from foreign civilizations except of the idea of a bow and arrow — the common property of all mankind.

During their wanderings, the various tribes lived in regions where some implement or other, or some method or other of hunting, has been inapplicable. When afterwards they came to other regions where the conditions of life were similar to those the tribe had originally left behind them they have, so to speak, been obliged to re-invent and perfect anew implements of which they retained only some vague notion (along with the names) from their former home. Thus the Greenland tribes on their immigration across Ellesmereland and Smith Sound were not able there to use the kayak with its accessories, and did not do so until they arrived at southern regions where it had to be re-constructed and perfected anew. This is still attested by the fact that the different main types of the Greenland kayak appear to have a regional distribution exactly similar to that of the main forms of the Greenland dialect.

A technological investigation of the various forms shown by the Ulo or Woman's Knife proves that there exist no regional forms of this implement, as has been suggested by Mason. The various well-known forms are all referable to a few types, which are of importance only from a technological point of view. These types were due to scantiness of material, and when this no longer existed, the form of the implement approached more and more a definite

ideal form such as that expressed in the forms with which the Eskimo are supplied through their trading connection with Europeans.

Neither, as regards stone lamps for the burning of seal oil, are there found any regional forms proper, to justify the statement that each tribe had its own form. The form, in this case, is primarily dependent on the accidental form of the raw material, and in a less degree on the object in view. There is, however, here, as shown by HOUGH, a certain degree of adaptation to local needs, in so far as large lamps are in the majority in the high Arctic regions and small ones in regions where the period of darkness is comparatively short, or where other fuel is used. But that does not preclude large lamps also being found in the latter localities because a surplus of light and heat is inevitably connected with the Eskimo idea of luxury.

Of the various, both ancient and modern, methods for hunting on ice in West Greenland a more exhaustive description is given here than has been given anywhere else, and in the case of each method an account is given of its dependence upon local, climatic and other conditions, as also of its economic importance.

A number of old, and several new implements are here described for the first time. Some of them have occasionally been mentioned previously from West Greenland, but have not been exhaustively described; and some have hitherto been known from other Eskimo tribes only. The following should especially be noticed: — Shooting harpoon for use on kayak; harpoons for hunting Arctic Right Whale; detachable lance-head for harpoon; a sealing net of whalebone strings; a shooting screen for hunting on ice and for use on kayaks; a drift rudder; a rifle bag for the kayak; marrow-extractors; a louserake (back scratcher); some specimens of *ajagaq*; and a stone knife for carving in bone and wood. Also, a description is given of the peculiar working method employed in the use of the stone knife.

Lastly, I wish once more to draw attention to the fact that the common "models" from West Greenland especially of kayaks, umiaqs, and sledges are not true models, but merely the products of a domestic industry and intended for sale to foreigners, and that all the proportions and peculiarities of construction usually differ greatly from those found in the real article. And as a closing remark I want to point out that though faked "antiquities" are very rare, yet they may sometimes be met with.

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Additional notes.

The manuscript of the present work was finished in November 1911 and was sent to Copenhagen in March 1912 for publication, and it is to be regretted that its publication has been so long delayed. In the meantime I have had the opportunity of studying a much larger material, belonging partly to my own collection, and partly to those of others. This has not, however, had the effect of changing my opinion on those points in which I differed from others, indeed, in some cases, I am now in a position to give better and fuller examples in support of my views.

Moreover, by the courtesy of Professor F. W. Putnam, Cambridge, Mass.; Professor F. Boas, New York; the Smithsonian Institution, Bureau of American Ethnology, Washington; and the American Museum of Natural History, New York, I have been able to consult some more recent American literature on the Eskimo tribes west of Greenland. It is here my pleasant duty to express my cordial thanks for this help.

As regards the material culture of the Greenlanders as indicated more particularly by their implements two important works have in the meantime been published. The one is H. P. Steensby: Etnografiske og antropogeografiske Rejsestudier i Nord-Grønland, 1909, Meddel. om Grønland, 50, 1912. In this the author has among other things described the Rifle Bag, the Drift Rudder and the Shooting Screen for Kayak, consequently, the description given by me in the present work cannot be called the first. As, however, it supplements that of Steensby in some points, especially, as regards the figures, I have let it stand.

The other is W. Thalbitzer's great and valuable work: The Ammassalik Eskimo, I, Meddel. om Grønland, 39, 1914, in which the author has firstly prepared and published a new edition, in English, of G. Holm's classical studies on the East Greenlanders, and of such works of other authors as are directly connected with them. Thalbitzer has thereby supplied a long-felt want and ethnologists outside Scandinavia will feel very grateful to him. Moreover, Thalbitzer has here given a most elaborate and copiously illustrated description of

the implements of the East Greenlanders, based on all the available collections and on the author's own studies in the field. In this work THALBITZER has also taken the opportunity to correct some erroneous statements concerning West Greenland implements which he had made in a previous work, and which I have pointed out in the present work. But at the same time he happens to have made some fresh mistakes — probably owing to want of sufficient museum-material from West Greenland. In so far as they have reference to the particular subjects, of which I have been treating, I feel it my duty to correct these positive errors before they circulate further. Lastly, there are points regarding which THALBITZER's and my opinion do not coincide, because we regard the problems from different points of view, and try to solve them in different ways.

In consequence of all this I should have liked to rewrite some parts of the present work, but during the short space of time which intervenes in Greenland between the arrival and the departure of the steamer it has been impossible for me to do more than read through — in proof — that part of my MS. which had already been printed, and to write some scattered additional remarks to those parts of my work where they were most urgently needed owing to the new publications.

To page 126.

THALBITZER says (loc. cit. p. 425) "Which of the flat sides of the harpoon we should call the upper or under side, must depend upon how the Eskimo places the head on the harpoon shaft, when he lays it on the kaiak, or lifts it preparatory to casting." With this I can fully agree, but when the author "imagines, that in throwing the belly of the harpoon toggle looks upwards, — thus the basal barbs, produced by the bevelling of the base, lie in the plane of the under side," he is mistaken. Just the reverse is the case; during the throw the harpoon must be placed with its bevelled toggling butt above the foreshaft, and the loop of the line below, otherwise the loosening of the shaft will be impeded, as also the toggling movement of the harpoon. Therefore I call the side which faces upwards during the throw the dorsal side, and almost all my figures — and those of others also — show the harpoons as seen from the ventral side.

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At the hinder end of the toggling butt of numerous harpoons of more primitive workmanship there is a number of small notches which THALBITZER (p. 432) supposes to be merely ornamental. They are, however, of decidedly technological importance, as without them the butt would slip from the layer of fat. Therefore, they are not found in the more highly developed harpoon-forms, where the toggling butt is acutely triangular or deeply bifurcated, because they are not wanted.

To page 152.

MASON is right when he describes foreshafts of harpoons and lances as

sometimes having a socket at the base and sometimes a tenon, because both forms occur indiscriminately, although perhaps the former is now more common. Of ten specimens of *igimaq*'s which I have before me, three have tenons, six sockets, and one nothing at all, being simply cut straight off. And very much the same is the case with the foreshafts of the lances (cf. THALBITZER, p. 411, and my Fig. 16, *r*, *s*, where both specimens have tenons).

To page 146.

THALBITZER says p. 418 "With the *tikaagut* (lance thrown by hand) the cast is said to be longer than with the throwing stick." This must be a misapprehension, because just the reverse is the case, the throwing stick increasing the length of the arm and adding to its power. If a man has sufficient courage he may approach so close to the prey that he can throw with his hand alone; if not, or if the prey is dangerous, he must throw from a greater distance, and then a throwing stick is necessary. The throwing stick is one of the numerous precautionary measures found in the kayak.

To page 146.

I have lately had an opportunity of studying a collection of harpoons from a single settlement, viz. Hunde Eiland in Disco Bay. There were 46 pieces, no longer in use; the majority were of recent date. And either, because they were broken and could not very well be mended oftener, or because they had been lost by accident or had become useless owing to the violent death of their owner, they had been cast aside. A smaller number were found in old sites of houses, or at the coast, and of these some were undoubtedly old.

As regards form and size there were no two identical pieces in the whole collection. In all the newer harpoons the length of the bone piece, excluding the blade, varied from 7 to 10 cm. Among the older harpoons some were small in size, only 4—6 cm. long. Excepting a few, they have all had, or still have, iron blades. Taking the forms which I have illustrated in Fig. 11 (p. 141) as a starting point we may group them as follows:—

A. With two lateral barbs.

I. Cf. Fig. 11, *d*, *p*, *r*; toggling butt bifurcated; 9 pieces.

II. „ „ „ *q*; toggling butt undivided, pointed; 6 pieces.

III. Toggling butt with one large median point and two small points near base, or with three points of nearly equal size, or with a smaller median and larger basal point. Thus, this group contains fair transitions between the two former; 6 pieces.

B. Without lateral barbs.

IV. Cf. Fig. 1, C; toggling butt bifurcated; 10 pieces.

V. „ „ „, B; Fig. 11, *a*; toggling butt undivided. In this group several are very old; one may have had a stone blade. Most of them are probably harpoons for thrusting; 6 pieces.

VI. Transitional types between IV and V: toggling butt trifurcated; 2 pieces.

Thus, the harpoons hitherto mentioned form two quite parallel series. Besides these we found some groups diverging from those mentioned above.

VII. Small harpoons without lateral barbs, toggling butt bifurcated, not lying on the dorsal side, thus having two symmetrical

planes (cf. Fig. 11. *m*). Several, and perhaps all, harpoons for thrusting; 4 pieces.

VIII. Without lateral barbs, toggling butt lateral, unsymmetrical. Cf. the hinder end of Fig. 11, *c*; 2 pieces.

IX. A rather unusual form, somewhat different from all forms actually known to me. One old specimen, having had, however, an iron blade.

After having examined this collection, I thought it would be interesting to see the harpoon forms which are in use at the present time at the same settlement, and seized the opportunity of doing so during one or two stormy days when all the kayaks were at home. I investigated some 60 kayaks with their accessories — it is one of the places where the kayak culture stands as high as in the southern part of the west coast. The investigation showed that the majority of the harpoon forms belonged to groups I—IV, but that within these limits the same rich variety occurred as in the collection from Hunde Eiland, so that here, also, no two identical forms occurred. In comparison with the conditions as they are known to me from other settlements hereabouts it struck me that the number of harpoons with lateral barbs was relatively large. The fact is, that in other places these harpoons are rare or totally absent, and type IV is the dominant one. But recently Mr. KARL OLRIK of Rodebay, district of Jakobshavn (whom STEENSBY quotes as an authority on the history of the drift rudder), has in the Greenland periodical *Avangnarmioq*, 1914, No. 4, recommended his countrymen to retain it, and has, at the same time, drawn their attention to a new form which he thinks is not sufficiently known in North Greenland, and not at all in South Greenland. In the new form, instead of lateral barbs on the bone-piece, there is a small lateral barb on the iron blade itself. Mr. KARL OLRIK first saw it some time "between 1870 and 1880" with a man from Nûgâq in the district of Ritenbenk, but he does not know who invented it, or how old it is; but he thinks it originally came from that district.

The object of this new form is as follows:— It is becoming more and more common to shoot the seal before it is harpooned. But as seals float only when in a certain state of nutrition a seal is often lost because the hunter does not succeed in reaching it quickly enough to attach it firmly to the harpoon. As a last resource the hunter tries to harpoon the sinking seal through the water, but as, in this case. the projections on the shaft offer great resistance, especially the *ernangnaq*-form. the throw does not reach far, and is not very effective. But if the hunter succeeds in getting a barb, be it ever so small, into a dead seal, he can thereby draw it up. If the seal is only wounded, then of course, in tossing about, it frees itself from the small barb, but then it must come to the surface to blow, whereupon it may be harpooned more effectively, so that the harpoon toggles.

To page 153.

As one of the advantages of the East Greenland double bladder THALBITZER (p. 455) mentions that it "can keep two seals up, the other only one." But as is well-known the large bladder is not used to keep the dead seal afloat; for that purpose even the smallest towing bladder is sufficient, the specific gravity of the seal being only very slightly greater than that of the water. The resistance offered by the bladder to the wounded diving seal is simply dependent upon its volume, and the combined volume of an East

Greenland double bladder. judging from the figures, is not greater than that of the large North Greenland bladder.

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I have subsequently seen a large number of reserve lances from the islands in Disco Bay. It appears that the majority of them have the two small lines fastened in a manner somewhat different from that shown in my Fig. 25, A. The bone piece is more cylindrical than in Fig. 25, A; and at the strongest point, midway between the socket for the foreshaft and the slit for the blade, there is a complicated system of boring which consists of four holes two on each side of the plane of the blade. From these holes grooves lead down towards the basal edge, and two small lines are spliced in a loop through the holes, one on each side. One specimen had a simple boring, enlarged on one side for the reception of a large knot; it has consequently been fastened with one line only.

They vary in size being from 8 to 13 cm. long, and in the majority the blade is relatively broader than in the specimen figured in the present work.

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STEENSBY, in the paper mentioned above, has been able entirely to unravel the history of the drift rudder and to establish the fact that the shooting screen must have been developed by remodelling the far older shooting screen for hunting on ice. Of this view, which is in accordance with the opinion expressed by me on p. 181, I have additional proof. Among the shooting screens which occurred on the kayaks I examined on Hunde Eiland on the occasion mentioned above, there were two in which the *tâlutarfik* was shaped like a veritable little sledge, which, with the exception of its size, differed from the small sledge for the shooting screen for hunting on ice, only in having its runners bent inwards towards each other at the bottom, to fit the fore end of the kayak. These two specimens belonged to two of the oldest hunters, and one of them explained to me that they were thus in old days; while now, one was content with a simple wooden block with a dovetailed slot, because it was easier to make, and served the same purpose.

The Greenland editor, LARS MØLLER, in the article cited by STEENSBY, also says expressively (p. 142) that the shooting screen is mounted on "a kind of a small sledge." In the original stands *qamutaussaq* "something like a sledge" which is just the technical term for the shooting sledge for hunting on ice.

To page 211.

THALBITZER, on p. 679, mentions that I have comprised all the Eskimo Ulo-forms within three main types, but I regret that he does not mention the technological reasons I had for doing so. According to THALBITZER it appears that SOLBERG, whose work is unfortunately inaccessible to me, maintains that stone implements, which had formerly served as Ulos are wanting in West Greenland. This statement, if made, is wrong, and must be due to deficient material. Sector or quadrant shaped pieces sharpened along the curved edge are by no means rare, and lately I saw — in a collection belonging to another — a large crescent shaped Ulo-blade of grey porcelain jasper. It was 9 cm. in length, but one end was broken off, so that its entire length had been about 11 cm. In the middle it was 2.6 cm. broad. It had been polished on both sides, from slightly above the middle down

to the convex cutting edge, while the upper, slightly concave edge had not been polished. Afterwards part of this polished surface was lost, having been split off by the action of frost, a fairly common phenomenon in Greenland stone implements (though its occurrence has scarcely been sufficiently taken into account by ethnologists!). The blade has doubtless been fastened into a groove of a piece of bone, which again has been fastened to the handle proper.

This specimen was found in a woman's grave on the island of Manîtsoq near Egedesminde.

That fewer forms of Ulo are now found in West than in East Greenland is of course quite natural. Access to better material has been far easier in the former region, consequently, the finished ideal form, which cannot be perfected any further, was able to come into existence far earlier there. Besides, we must remember that as yet, we have very little knowledge of the former, uninfluenced condition of the implements of the West Greenlanders. Formerly, their implements were not collected as have been those of the East Greenlanders.

When THALBITZER says that forms such as my Fig. 46, Nos. 12 and 18 are not found in Greenland, he is right as regards No. 18. The fact is that this piece is probably unique as regards its outline merely, which exists only in this specimen in Washington, being probably due to a casual caprice of the maker. But technologically it is very much the same as those from East Greenland, or one might call it a transitional form between these and what I call the ideal type: the fingers are distributed around the middle bar which is really superfluous here. On the other hand I have seen type No. 12 here, where it has probably occurred almost as frequently as elsewhere, this type is one of the final stages in the progression towards the ideal type, and in it the blade, for the sake of additional strength, is fastened to a bone piece; the blade may be of iron, but stone blades may also be advantageously secured thus. Moreover, THALBITZER says that forms such as my Fig. 45, Nos. 4—6, do not exist outside Greenland. He overlooks the fact that No. 14 (North West Canada) has precisely the same form, and that Nos. 18 (West Alaska) and 21 (Thlinkit Indians) are, technologically speaking, nearly the same.

I cannot understand why this Ulo-form which I call the ideal type may not be "a true Eskimo implement" because it is entirely, or partly, made from imported material. If it had been a European tool which the Eskimo had adopted for his work, as for instance a pair of scissors or a rifle, then I could have understood this statement, but it is, on the contrary, a form which the Eskimo is everywhere endeavouring to reach with more or less success according to the material at his disposal. But he cannot make it himself in its most perfect form, because for this he has neither tools nor forging fire. In its perfect form it is prepared especially for the Eskimo by those who deal with him, and of course according to his wishes.

On the other hand, when THALBITZER writes that my "intention seems only to expound the developmental types of the cutting ulos, not of the scrapers" he is quite right. My first object in the task I have set myself has been to try and find out as accurately as possible what is the purpose of each article, and how it is used, because then only can I hope to understand its form.

To page 219.

I have lately had an opportunity of studying a collection of West Greenland lamps and soapstone kettles — probably the largest collection

A *savssat* off Godhavn.

The Narwhals have gathered in two small openings in the ice, and people are busy securing for themselves the right of possession by thrusting harpoons into them; killing them; drawing them up; and driving the blubber home on sledges. In the background, to the right, sledges are coming from the settlement at Skansen. (From a drawing by G. Kleist.)

which exists from a single district — belonging to Mr. THRON. the manager of Holstensborg. It contains at the present time about 150 specimens, the majority of which have been in use until now; but there are also many very ancient specimens from the ruins of houses and from graves; for instance, one is from a grave which, on account of the secular sinking af the coast, was almost washed away. All possible sizes occur, ranging from over 40 cm. in length down to little girls' lamps, or to quite tiny dolls' lamps, only about 3—4 cm. in length. In the whole collection no two identical forms occur. Taking HOUGH's typical outlines as a starting point, this great wealth of forms may be grouped around the following "types."

The forms most frequently met with are similar to HOUGH's Nos. 2 (Cumberland Gulf), 3 (Smith Sound) and 4 (Repulse Bay); then come the elliptical ones with flat reservoir such as HOUGH No. 6 (East Greenland) and semicircular such as HOUGH No. 9 (Kotzebue Sound). Moreover, trapezoid lamps with rounded angles occur frequently, of which there are no corresponding forms in HOUGH's outlines: others are circular such as HOUGH No. 12 (Bristol Bay) or slightly oblong such as HOUGH No. 14 (Aleutian Islands), the two latter types with deeply hollowed reservoir. Then there are types with ridges, similar to the one I have figured, and a great many rarer types, each of which is represented by only one or a few specimens, e. g. rectangular with elliptical reservoir, ditto with edge for the wick on the narrow side, elliptical or pear-shaped with edge for the wick on the narrow side, this form recalling that of HOUGH No. 13 (Kadiak).

Among the dolls' lamps there are three types which are of interest in so far as, owing to their small size, want of material has scarcely played any rôle. Here the maker has consequently been able to fashion the lamp as he liked. Here the most frequent forms are like HOUGH's Nos. 2—4 and 6, then comes No. 7, not because the ledge is of the least practical importance in such small lamps, but because the form with the ledge *(qutdleq oqalik)* is regarded as being the most correct one. Lastly, among the dolls' lamps of most recent date there frequently occurs a form which consists of a rectangular, rather high block, in which a reservoir is made. The fact being that it requires nothing special to stand on.

Moreover, the collection shows interesting examples of repairs, and of lamps made as a make-shift. For instance, there was a broken-off piece of a huge lamp of HOUGH's type No. 4, which the finder had provided with a square depression, and in this condition it served as a lamp when Mr. THRON acquired it. In another case, where the soapstone lamp was broken beyond repair, the wick was placed in the clumsy three-legged wooden cup, which had originally been intended to catch up the waste oil, and was used as a lamp until one side of it was entirely burnt down. These two examples show better than many words how few are the claims made by such lamps.

Several specimens showed distinctly the method employed in making them. As might be expected, the reservoir is first hollowed out, and then the outer part is formed. In many the latter part had not yet been executed, although the lamp had been in use for a fairly long time. Regarding this point Mr. THRON had obtained the interesting information that in such cases the maker had died before the work was finished. Then nobody else would finish the work; but the lamp could very well be used. In the majority of the flat lamps the bottom of the reservoir sloped towards the edge with the wick, and, often, also obliquely towards one side; but in a good many specimens it sloped away from the edge with the wick.

In some cases Mr. THRON had been able to get information regarding

the history of the lamp during 3—4 generations, and often such specimens had with their changing owners made most extensive wanderings within West Greenland, so that they were obtained far from the place where they were made. In some cases, apart from the labels, it was possible on petrographical evidence alone to arrange them in groups around the localities, by no means numerous, where a serviceable soapstone occurs. But not even within a single such centre of production was it possible, either in form or in size, to demonstrate points which could be regarded as conventional or regional.

THALBITZER, on pp. 501 and 674, mentions whetstones with holes, and suggests that this is perhaps due to foreign influence. Here, at Disco Bay, almost all ancient whetstones have holes, while they are absent from the modern specimens, and, according to tradition, the explanation is simply this, that before Europeans came into the country there were no pockets in the trousers, and therefore a cord was necessary to carry the whetstone when travelling or hunting Caribou.

To THALBITZER, page 554.

Here, stave-vessels are extremely common in old graves and sites of houses, and I think there is no need to refer them to foreign influence. Besides, in some points they differ from European cooper's work.

To THALBITZER, page 574.

Frocks of bird's skins *(timiaq's)* are commonly used also by women in West Greenland, even in our days.

To THALBITZER, page 677.

As has several times been mentioned, in West Greenland lances occur both with and without a throwing stick, and the author is doubtless right in regarding the latter form as the older. NANSEN's record of a harpoon thrown without a throwing stick is not due to misunderstanding. Such forms of *ũnâq* still occur, and used to be more common formerly.

THALBITZER has, on page 681, drawn attention to a statement of BEHRENS, otherwise undoubtedly quite overlooked, that at Umanaq a "skin basket and a kind of implement made of reindeer-horn" are used for gathering berries, and he "imagines that this implement may have been a comb." It is not. I possess two specimens, one of which, from Hunde Eiland, is very old, and much worn. It consists of a rather thin shell of antler, 22 cm. long and 6 cm. broad, rounded off and pierced with a hole at either end. The bone piece is moreover sufficiently curved to allow the handle, a 18 cm. long wooden stick, to protrude with its ends about one cm. through the holes, so that the whole implement resembles the hilt of a sword. The other specimen is from Skansen, on Disco Island; here the bow is made of whalebone and is slightly more curved. The implement is called *kumigaut* from the same root as *kumigpâ* (192), he scratches him or he louses him. The berries are scraped off in the autumn or winter after the frost has set in, and the name takes it origin from the fact that the berries are considered to be the louse of the earth. They are scraped off, not into a basket, but into a bag made of an old boat-skin. My specimen is 38 cm. high, and about 32 cm. in diameter; it is provided on one side with a carrying strap. The bottom is of thinner skin, and is provided with numerous small

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square holes for sifting the snow from the berries. It is called *kiligaut* from *kiligarpâ* (177), she scrapes berries in this way. As berry-gathering is no longer of any great importance here, these implements are scarcely used much nowadays; they are, however, known to everybody.

Thalbitzer summarizes on page 728 the provincialisms of the material culture of the Angmagsalik district, whereby it differs from that of the West Greenlanders, and mentions 39 objects in particular. It is seen, however, that almost one half of these are, or were, also found on the west coast, and future finds will probably bring others to light. Here I shall mention those regarding which my information is certain.

No. 2. Whip-lashes with ivory beads were, according to verbal information received from Mr. Thron and the native manager of the trading place Sarfanguaq, Mr. David Olsen, until a few years ago common in the district of Holstensborg.

No. 3. The whip-handle is also used in West Greenland as a brake when going down long, and not too steep, hills. The reason why it is no longer provided with a bone ferule for this purpose is that the handle is now of little value; it is however sometimes met with.

No. 4. Boat-hooks of bone on wooden poles have been used here for *umiaq*'s, and small tools for scraping the dirt out from between the skin of the boat and its wooden frame are used even today.

No. 6. The lance is frequently thrown with the throwing stick in West Greenland; and this is not quite a recent innovation.

No. 13. Men's finger protectors *(kuvdlorfik*, from *kuvdloq* (193), thumb) are used everywhere even today; formerly, knee protectors *(sêrqorut*, from *sêrqoq* (318), knee) were used everywhere, but these have gone out of use, since the custom of sitting naked indoor ceased.

No. 14. A thong smoother, of bone, pierced with many holes of various kinds, is quite an indispensable tool, even for Europeans who themselves drive dogs. Here also it is often made of the penis-bones of the large seals.

No. 15. Narrow three-barred drying frames for rawhide lines and whips are common here. They have a somewhat better form than those of the Angmagsalikers, the three bars being held in position by slightly angular or curved end pieces, which force the middle bar out of the plane of the other two, and thus promote the drying process materially. Besides the drying the intention is also that the wet line or whip-lash shall return to exactly the same coils as when it was new. The coils are therefore laid very carefully so that the hairy side everywhere turns outwards. Then the line can be replaced accurately in the line-rack, and run smoothly when the seal is hit. And a whip, which is not carefully treated after it has got wet, soon becomes useless. Here, the technical name of the implement is *imussivik* from *imuserpâ* (98), he places a rawhide line in exact coils, while *initsat* (100) is a more generic designation, which especially signifies the large drying rack for clothes and foot wear.

Four specimens of native workmanship which I have here before me are each about 50 cm. in length.

No. 16. Man's knives, see pp. 195 sqq.

No. 20. Bone needles for stringing fish are used in West Greenland; but, certainly, I have not heard of their being used for caplins.

No. 25. In a note (p. 753) the author mentions some examples from West Greenland of ivory relief-work nailed on wood. I have also seen some, and there has undoubtedly been much more formerly, but it is lost.

No. 27. Seal-tail ornaments are not rare in West Greenland, e. g. on small toggles, "feathers" for *ernangnaq*, etc.

No. 28. Serrated edges on buckles are very common, for instance on hunting bags.

No. 29. The dot and circle ornament is common; see for instance my Fig. 42, D.

No. 31. At Cape York, also, the men wear hair-bands, not halter-like as at Angmagsalik, it is true, but consisting of a single cord round the forehead. I have a carving in wood representing the bust of a man with thick, long hair which is held in place by a cord round the forehead. The piece appears to be very old. I found it in peat on a camping ground on the small island *Kavdlunait nunât*, east of Egedesminde. The name of the island: "the land of the white men, especially of the Danes" must not lead one to believe that there has ever been a Danish settlement there. The island is uninhabitable because it lacks drinking water; it belongs to the so-called "Peat islands," the whole island being covered with a homogeneous mass of peat. The name is an old Greenland joke because the island is quite flat.

No. 33. I doubt whether masks are really unknown in West Greenland. Here it is customary on Twelth-night for children and young people to run about from house to house in strange grotesque disguises: skins with the hair outside, women in men's clothing, sometimes with large phallus-like appendages attached. They perform odd dances, must not talk, but only produce indistinct or inarticulate sounds such as hm! el. l. Usually they wear grotesque masks made of skin; on one occasion I saw one elaborately carved in wood. These masks do not at all resemble European shrove-tide masks which, though known to most of them, they have no desire to use for this purpose, but they far more closely resemble masks from Alaska. I have not been able to obtain any information as to the age of the custom; it is merely said to be "very old."

No. 37. Toys with nodding birds are common on the islands in Disco Bay (cf. p. 226).

No. 39. Slings (*igdlûtit*, 77) are commonly used by children.

I should like to conclude these additional notes by adding that the more minutely we study the material culture of the Eskimo, the more homogeneous we find it to be, a fact which accords well with the relatively great homogeneity of the conditions of life which nature offers to its children in the Arctic. Each object tells its own story of the difficulties due to stubborn material of inferior quality which have been conquered by an intelligent people with extremely poor tools. Where the needs, and the ways and means of satisfying these needs, are the same, there the implements too will, on the whole, be the same. But that does not prevent a wealth of form as in life itself presenting itself where we have a sufficiently large collection of the same implement, a wealth of form which should warn us against drawing too narrow limits as regards "types."

Disco, August 1914.